



The new BMW 7 Series



Der neue 7er BMW
The new BMW 7 Series
La nouvelle BMW Série 7
La nuova BMW Serie 7
El nuevo BMW Serie 7

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Dear Sir or Madam,

There's a minor error in the press kit we would like to correct: The long-wheelbase version of the new 7 Series is 14 cm (5.5") longer and not, as stated erroneously in the text, 11 cm (4.3"). We apologise for this mistake and request you to note the correct figure.

Yours sincerely,
BMW Press Department

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The New BMW 7 Series: Superior in Every Respect

It should be easy to handle, nimble and agile. A car in which you feel at home, a car which is simply fun to drive. This applies to every BMW, and therefore also to the large saloon series proudly bearing the white-and-blue emblem now entering the market as the third generation in BMW's luxury performance range: the new 7 series.

The new BMW 7 Series has everything it takes to continue the outstanding success of the second generation 7 Series launched in 1986. Indeed, everybody will remember that the "former" 7 Series was the car that gave BMW the final breakthrough to the top in the luxury performance market. A car with a concept combining typical BMW fortes such as safety and dynamic performance with timeless, discreet elegance, making the 7 Series an entirely new type of automobile at the top end of the market. Eberhard von Kuenheim, at the time BMW's Chairman of the Board of Management and now Chairman of the Supervisory Board, made it clear back then that BMW had given the engineers responsible for developing the new car a very straightforward and demanding brief: to build the best car in the world, taking the sum total of all its features. And applying this to today's market, the standard to be achieved by the new 7 Series is of course once again just as demanding.

Accordingly, the new BMW 7 Series is entering the market as an all-new saloon with four-valve 8-cylinder power units developing 160 kW/218 bhp in the 730i and 210 kW/286 bhp in the 740i - power units offering the very best in terms of performance, motoring comfort, and fuel economy. (Who would have imagined only a few years ago, for example, that an

automobile of this calibre would be able to achieve a combined cycle fuel consumption of less than 11 litres/100 km or 25.7 mpg Imp?) A further feature of the new 7 Series is that the car comes with a safety concept which could simply not be more thorough, consistent and efficient - a concept which naturally includes driver and passenger airbag both fitted as a standard. And it goes without saying that two other essential points are the supreme comfort and protection offered to the car's occupants as well as the sheer luxury, class and style of the interior.

While many may regret the demise of the "old" 7 Series, emphasising that the car is far too beautiful and up-to-date to be taken off the market, there is an important reason for this change in generations: In this day and age of rapid technological development an automobile of the class and calibre of the 7 Series must rank right at the top in terms of technical progress. Or, to put it in simple terms, even the best car will find its master when the very best comes along.

In determining the dimensions of the new 7 Series, our initial consideration was that the demanding motorist these days expects an even more generous interior, especially when travelling in real style with several passengers (and a lot of luggage). The particular achievement of our engineers in this context is that they have indeed succeeded in offering such extra space while keeping the exterior dimensions of the car almost the same as before. Hence, the new 7 Series is only a bit longer and wider than its predecessor, while its interior dimensions have grown much more than the exterior dimensions of the car. And this, after all, is what we were aiming at, since the new 7 Series develops its particular character from the superior agility it is able to offer.

True class and calibre is not only a matter of centimetres or inches, however. On the contrary, through its design alone, the new 7 Series emanates dynamic elegance and underlines its smooth and compact supremacy through the interaction of clear-cut lines and surfaces typical of BMW with soft, gently rounded sections of the body.

The most important factor contributing to genuine class and calibre is nevertheless the inner superiority and inner values a car is able to offer. And here it is indeed most appropriate to call the new 7 Series a great and truly outstanding car. It stands out clearly from its predecessor by the fact that it has been refined to the last detail in virtually every respect, all these improvements being of a nature only a completely new design could ever make possible. On the other hand the new 7 Series offers continuity by retaining proven values and adding novel features only where they really benefit the customer. From the wide range of fortes and superior characteristics offered by the car, just a few are its generous spaciousness, excellent vibration control and sound-deadening, superior, highly pleasant climate control, the ergonomic but luxurious interior and, not least, the magnificent suspension with its all-new rear axle. These are the features that contribute significantly to the supreme class and style of the new 7 Series.

Like the former model, the new 7 Series is also available as a special long-wheelbase version. This point deserves particular emphasis because the lwb model - and again, this is a feature the new car has in common with its predecessor - hardly looks 11 centimetres or 4.3 inches longer than the "standard" version, while offering a lot more space inside.

Another common feature brought forward from the former model is that the new 7 Series in 12-cylinder guise will intentionally look very similar to its "smaller" brothers. Indeed, when the new flagship in the BMW range is launched in the not too distant future you will really have to look closely to recognise it as the 750i.

Luxury performance saloons have a long heritage at BMW: The 335 built from 1939 to 1941 - albeit only 415 times - came with a 90 bhp straight-six power unit giving our large four-door saloon a top speed of 145 km/h or 90 mph. And the 501 to 3200 models affectionately called the "baroque angels" by many have already become a legend in their own right, productions of the various versions amounting to almost 23,000 units between 1952 and 1963. Then, after a short interruption, a model series was launched in 1968 starting with the 2500 and leading, as we may say today, right to the direct predecessors to the 7 Series: These were sophisticated but dynamic luxury performance saloons, the most powerful of which, the 200 bhp 3.3 Li, achieved a top speed far in excess of the 200 km/h mark even back then. Up to 1977 production of this model series amounted to roughly 220,000 units, before the first 7 Series saw the light of day with a production run of 285,000 units between 1977 and 1986. The second 7 Series launched in 1986 exceeded this figure once again within a much shorter period, production amounting to 310,000 units by 1994, almost 50,000 of which were 12-cylinder 750i/L models, the first 12-cylinder to be built in Germany since the Maybach back in 1939. And although the new 8-cylinder power units introduced for this model series entered the market as recently as in 1992, nearly 43,000 of these luxury saloons are already being admired on the road the world over.

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Design

Exterior design

In its design, every new BMW represents a continuous development of the specific styling principles and concept characteristic of the make. A further advantage of this philosophy is that it retains the family resemblance of each BMW model series, each car clearly revealing its link to the other models in the white-and-blue line-up.

At BMW, good design is never a purpose in itself. For it is only the pure synthesis of design quality and functional quality that creates a perfect whole - and precisely this is the essential prerequisite for lasting, ongoing success.

With this in mind the new BMW 7 Series continues the design philosophy already created by its predecessor still very young in terms of styling, and of the current 5 and 3 Series saloons. While the new 7 Series is slightly larger than its predecessor in absolute terms, it looks smaller and lighter. And it is this symbiosis of "lightweight" looks, timeless elegance, and superior dynamics that characterises BMW's tradition in automobile design.

Seen from the front, the new 7 Series is clearly a BMW even from a distance. The most striking visual feature in the lower and even wider front end of the car is the BMW "kidney" grille now much flatter, wider, and fully integrated in the engine compartment lid. To the side the kidney grille is supplemented, as on the BMW 3 Series, by dual headlights typical of BMW and covered by glass plates, after which come the direction

indicators fully integrated in the wings of the car. The entire front area is rounded off at the bottom by the bumpers and front spoiler with a fully integrated, widely extended air intake scoop comprising the fog lamps at the side.

Another characteristic styling feature is the typical swept design of the entire front section emphasising the dynamic appearance of the car.

From the side, the new 7 Series excels at first sight through its sleek silhouette extending from the low-slung front end to the slightly elevated rear end combining dynamic looks with superior streamlining. Again, the "light" impression conveyed by the car is accentuated by the clear-cut and consistent lines harmonising perfectly with the well-proportioned, horizontal subdivision of individual surfaces beneath the waistline. All this is complemented by well-known styling features typical of BMW, such as the "kick" in the C-pillar and the round wheel cut-outs following the exact contour of the wheels themselves.

New, different proportions from the side follow not only from the longer wheelbase, but also from the shorter rear overhang and the entire roof structure moved a bit further towards the rear, another eye-catching feature being the use of 16-inch wheels replacing the 15-inch wheels still to be found on the former model.

The rear-view mirrors developed especially for the new 7 Series combine aerodynamic and aero-acoustic advantages with the further benefit of keeping the side windows clean and free of dirt.

From the rear, the new 7 Series again has all the features typical of a BMW, the sleek and stylish rear design blending harmoniously with the overall styling of the car. Particularly outstanding features are the clear-cut but discreet aerodynamic "lip" around the luggage compartment lid, the rear light clusters based on the design of the BMW 3 Series, the horizontal orientation of all rear lines and surfaces, and the distinctive, highly functional rear apron with a diffuser ensuring superior streamlining and helping to keep the rear end of the car clean. The tailpipes are hidden discreetly beneath the rear apron and the luggage compartment lid, in turn, extends down in an elegant line between the rear light clusters nearly all the way to the bumper. This particular configuration follows the same course as the engine compartment lid around the headlights, again bearing witness to BMW's philosophy of creating all-round harmony from every angle. The low loading sill at the rear ensures effortless loading.

The new 16-inch wheels form an important design and styling feature of the car and are a brand new development and design in every respect. Depending on the model, these wheels come in four or five different versions fitted either as standard or as an optional extra.

Other important objectives in designing the exterior of the car were to further optimise its streamlining, to improve aero-acoustics and minimise contamination caused by dirt, and to avoid any trade-offs in terms of comfort and function attributable, say, to bright sunshine or the engine cooling system heating up the passenger compartment.

As a result of all of these improvements, the drag coefficient is down by approximately 10 per cent on average, now amounting to 0.30 on the 730i/740i as opposed to 0.33/0.34 on the previous models. And there is

also an improvement in wind noise, while various styling features help to keep the car clean even in bad weather.

Interior design

In designing the interior of the car, the objective given to BMW's stylists was to consistently improve BMW's all-round concept in line with the exterior.

Apart from ergonomically integrating new technical features and details in the overall design of the interior, one of the primary tasks was to further improve the already high standard of motoring comfort and the subjective feeling of well-being on the part of the driver and passengers (which, together with ergonomics, makes an important contribution to the active safety a car has to offer).

In short, the task was to provide optimum elegance and comfort in unpretentious but refined style.

The result is a pleasantly calm, generous and prestigious look ensured by the harmonious and stylistically "clean" design and colouring of numerous components and features. And the horizontal lines maintained throughout the interior make a significant contribution to this calm and sophisticated appearance. The top-quality wooden trimming, for example, extending round all side surfaces and the instrument panel itself, separating and connecting the differently coloured areas running both above and below this stylish embellishment feature.

When closed, the ventilation nozzles with their new multiple-plate aperture design blend perfectly into the surface of the instrument panel, an example of how BMW has sought to give the interior a "calm" look.

The light switches to the left and right of the instrument cluster are now rotary knobs, the optimum shape for perfect ergonomics. The styling of the displays and controls has been largely retained.

The controls and switches on the centre console conveniently face the driver in the proven ergonomic arrangement found in earlier models. The MID radio fitted at the top - also available with an operating unit for the digital signal processor - is hidden behind a folding wooden panel contributing to the serenity of the interior. Underneath it is the Multi-Information Display (MID) which integrates frequently used audio functions, the clock functions and in certain models an on-board computer and a telephone control console.

The console between the seats offers far more storage space than before, the handbrake previously fitted at this point now being replaced by a footbrake for parking. The length of the front centre armrest is now adjustable.

The height and length adjustable steering wheel excels through styling and handling functions typical of BMW. Standard features include not only an airbag but cruise control, radio functions, air recirculation controls and in certain models a telephone.

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Both the front and rear seats have been redesigned, the rear seats being available as an option with individual, adjustable body contour (standard on the 750iL).

The comfort seats fitted at the front (and standard on the 750i) substantially enhance motoring comfort for both the driver and the front-seat passenger, the backrest contour being separately adjustable on the upper one-third section, as is also the case on the individual rear seats just mentioned.

In their contours the inner door panels follow the horizontal lines and perspectives maintained throughout the interior, the door armrests containing the controls for the electric window lifts which are designed for perfect ergonomics and easy operation.

Great attention has also been given to the availability of even more storage space. For example, there are open storage compartments in all doors plus a spacious closed storage box in the two front doors (in all four doors in the long model). And apart from the large glove compartment in the instrument panel in front of the passenger, there is a smaller glove box for the driver to the left of the steering column.

Pull-out beverage holders are provided at the front on the lower end of the centre console and at the rear at the end of the propeller shaft console as standard features for 750i and all long-wheelbase models.

The propeller shaft console also provides ample storage space for music cassettes and other items.

Further storage pockets are provided in the front seat backrests, unless the backrests come as an option with a pull-out writing desk featuring a separate, closed compartment for paper and writing utensils or a folding table.

Other new comfort features include an illuminated vanity mirror integrated in the front-seat headrests behind a slide cover. Then, there are the courtesy lights adjustable to several different settings providing, as an example, dim night-time lighting at the rear also when driving in the dark.

To mention just a few examples of the perfection provided by the new 7 Series to the very last detail, we have the covers on top of the front seat guide rails and the moulded components on the roof lining and the inner top panels.

Colours and materials

The innovative Personal Line materials and colour concept introduced for the BMW 3 Series has been continued consistently for the new 7 Series.

In terms of exterior and interior colours as well as the materials used, everything reflects the elegance of the car's overall concept.

Apart from classic colours for the high-quality fabric and leather upholstery, the new 7 Series also comes with novel, modern colours offering the customer a wide range of individual choice.

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This diversity is achieved not from an arbitrary mix of various elements, but from a carefully co-ordinated combination of exterior and interior colours with materials to match. The overall result is harmonious styling throughout the car, both inside and outside.

There are two fabrics variants, a fabric-leather combination, and three leather combinations.

Apart from flock upholstery in four colours, wool velour upholstery is also available in four colours as an option (standard on the 740i).

Then there is also a combination of fabric and leather upholstery in sporting, elegant style and again with four different colours to match.

To meet growing demand for top-class materials, BMW now offers not only sturdy and durable Montana leather upholstery, but also nappa leather with a very attractive, highly natural surface. Indeed, this leather upholstery is available on both the standard and sports seats in different colours and with a most luxurious finish.

Yet a further option is the choice of Buffalo leather in charcoal-grey, offering an even greater and more appealing natural effect over and above the leather upholstery already mentioned.

A wide range of no less than 17 exterior colours provides a perfect match for all the interior colours, allowing the discerning purchaser to choose - as with the interior - between classic and modern, bright or dark colours, whatever he or she prefers.

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Bodyshell and fitments

The "foundation", one might say, of the new BMW 7 Series is provided by the extra-rigid four-door bodyshell with a very low loading sill at the rear, bonded windscreen and rear window. While the former 7 series already set a very high standard in terms of bodyshell rigidity, the objective of BMW's engineers in designing the new car was to substantially reduce the weight of the bodyshell relative to the overall weight of the car, establish an entirely new standard in terms of static and dynamic flexural and torsional stability, and in this way optimise the car's safety, comfort and performance features particularly in conjunction with the new suspension.

All this was obviously to include a further improvement in streamlining without comfort being impaired in any way by sunshine excessively heating up the passenger compartment.

Achieving an exemplary standard of passive safety and significantly outperforming all safety standards world-wide has already become a natural asset for BMW. These aspects are further enhanced on the new 7 Series by even greater ease of repair and lower repair costs in the case of front and rear-end damage caused by accidents at low speeds, in this way qualifying the car for even lower insurance premiums.

Another feature worth mentioning here is the first-ever use of a seat occupation detector to ensure that the passenger airbag is not triggered when not required and thus avoid the cost of replacing the airbag which would otherwise be incurred.

Further development highlights were

- to improve rustproofing to a new, optimum standard,
- to ensure that all fitments and additional components can be fitted to the car with maximum ease,
- and to further improve the already high standard of anti-theft security.

Body structure

With the bodyshell offering a much higher level of static rigidity (with its bonded windscreen and rear window), the car's dynamic performance and superior safety are greatly enhanced. Flexural stability of the propeller shaft tunnel, for example, an absolutely essential factor, has been improved by approximately 100 per cent, and torsional stability is up by more than 70 per cent achieving the unprecedented figure of 25,000 Nm/degree. The bottom line, of course, is that bodyshell rigidity as a whole has been improved most substantially.

Comparing the weight of the "body in white" (i.e., the actual bodyshell as such without doors and lids) with the car's static torsional stability and its wheelbase-to-track position on the road, one obtains what engineers refer to as the "function-related body structure weight" as a specific figure describing the qualities of the body as such. This figure for the new 7 Series proves that the BMW outperforms all its competitors thanks to its absolutely perfect lightweight steel design.

These excellent results are attributable to the much greater use of high-grade, high-stability steel.

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In terms of flexural and torsional stability, BMW achieved the ideal levels of 26 and 29 Hz, respectively. This very high characteristic frequency of the bodyshell, in turn, greatly enhances motoring comfort. And in conjunction with the minimisation of any residual imbalance in the drive train, this sophisticated design, especially on the front body section, helps to smoothen out virtually all vibrations.

The share of bodyshell weight in the overall weight of the vehicle has been reduced from 22.5 per cent with the first generation of the 7 Series to 21 per cent with the second generation and now to just 19.5 per cent with the third generation, despite a significant improvement in bodyshell stability.

Improvements in stability of this kind were of course only possible with the help of the most advanced computer, design and testing technologies. Profile cross-sections offering maximum stability, fully-enclosed, large-volume support beams, and particularly stable intersections were designed with the help of CAD, FEM, and modal analysis. And last but not least, the bonded windscreen and rear window, as on the previous model, help to further improve the overall result achieved.

Thanks to its extreme stability in design the passenger cell of the new 7 Series offers the car's occupants a very safe and reliable survival area in all crash conditions.

The superior rigidity of the passenger cell obviously results from a large number of different measures carefully attuned to one another, an

essential feature being the extremely stable floor pan with the following major components:

- Large-volume and therefore very stable side-sills
- Rigid connection of the front axles sub-frame to the engine mounts with predetermined deformation points to provide specific crumple action in the event of a collision
- Additional use of a lateral support bar at the front connecting the engine mounts
- The floor plate with particularly stable lateral support members, for example between the engine mounts and transmission console

Further measures have been taken to keep the passenger cell particularly strong and stable:

- Entire side frame made as one unit with four lock plates and side-sill supports, plus particularly stable intersection points on the A, B, and C pillars
- Doors with substantially improved side impact protection provided, inter alia, by an all-new door anchor system
- Particularly strong locks and door hinges
- Bonded windscreen and rear window
- Predetermined deformation of the engine compartment lid in a collision
- Particularly strong and stable design of the roof structure

Rustproofing

Excellent rustproofing is ensured by a combination of the following measures:

- Use, wherever appropriate, of electrolytically hot-galvanised body panels (either on one or both sides)
- All-round rustproofing provided by phosphate treatment and a cathodic dip bath
- Application of special rustproofing paint system consisting of an intermediate primer against stone-throw, a separate filler and topcoat, and, around the side-sills, additional PVC coating and underfloor preservation
- Hollow cavity preservation

Windows

All models in the range come as standard with green heat-insulating glass all-round. The windscreen and rear window are bonded flush to the body, the windscreen itself being made of laminated glass and coming as an option with a green stripe at the top to keep out excessive sun glare. The rear and side windows are made of single-layer safety glass and come as an option with double-layer insulating glass (standard on the 750iL). All side windows are fully retractable and feature electric window lifts incorporating a lift cable configuration, switch cord trap release, a fingertip function for opening and closing the windows, and a comfort function ensuring that all windows, and the sunroof, may be opened and closed together when locking or unlocking the doors.

The windscreen is raked at an angle of 58.7° , the rear window at an angle of 63.7° .

The streamwiper rest position on the windscreen is heated as a function of outside temperature, the rear window heating operates as a function of both temperature and time.

Lids

The engine compartment lid now including the kidney grille pivots at the rear on the new models in the 7 Series and is supported in position by two gas pressure springs. Operating through a newly developed four-joint hinge, the engine compartment lid may be opened to an angle of approximately 45° in its normal position and about 80° in workshop setting.

The engine compartment lid is held in position when closed by two rotary-cylinder locks and a safety hook. To protect pedestrians and cyclists, the windscreen wipers are almost completely recessed beneath the engine compartment lid which feature predetermined deformation points as an additional safety factor.

The luggage compartment lid comes with a discreetly contoured spoiler lip and opens by itself after being unlocked with the help of two gas pressure springs. A new four-pivot hinge on the luggage compartment lid provides an opening angle of 90° , meaning that loading and unloading the 500 ltr (17.5 cu ft) luggage compartment is extremely easy and

convenient, also thanks to the loading sill extending nearly all the way down to the bumper (with a small "step" preventing luggage from slipping out).

Soft Close Automatic fitted as standard allows the user to close the lid with maximum ease, avoiding the usual loud "bang" you so often hear in the process.

To ensure maximum security the door lock comes complete with a freewheel lock cylinder held safely in position so that it cannot be pulled out, and connected directly to the central locking. The luggage compartment lid is unlocked by a key with remote control or via an illuminated switch in the lower section of the A-pillar lining. And in the event of a power failure, the lock may be opened and closed directly by means of the car key. The high-quality tool kit with its integral warning triangle is fitted in the inner lining of the luggage compartment lid.

Doors

Opening to a wide angle of no less than 68°, the doors provide very easy and convenient access to and exit from the car, particularly in conjunction with the large door cut-outs. In addition, a two-stage door retainer makes getting into and out of the car much easier in confined parking spaces. The electric window lifts fitted as standard on all doors feature two-way fingertip control as well as a special trap release on all four windows. To make the storage boxes inside the door panels even larger, all the window lifts have operation cables facing to the outside.

To enhance motoring comfort all windows and the sliding roof may not only be closed by the remote control key, but also opened before you even get into the car, for example in order to cool down and air the interior heated up by the sun.

A special door seal system with three all-round seal profiles and a main seal in tube design ensures that all door openings are perfectly closed.

The doors on the new 7 series come with a particularly sophisticated and elaborately designed side-impact safety system. New, diagonal bars in all four doors act together with the extra-stable passenger cell to provide even more safety in a side-on collision, covering a larger area than any conventional solution. In severe collisions from the side the diagonal crossbars come to rest firmly on the door frame, thus making the entire door and body structure extremely strong and stable. With the crossbars subsequently moving back to their original position after deformation, the positive engagement provided in this way is re-opened for easy operation of the doors.

Lock system/anti-theft security

The high-security rotary-cylinder lock on the driver's door is particularly safe in the event of a collision thanks to the Bodwen cable operating the lock mechanism.

The doors are opened and closed - and the immobiliser fitted as standard as well as the central locking system are automatically deactivated and activated - by the standard-fitment remote control operating from a

distance of up to 20 metres without requiring the key to be pointed in any particular direction.

In the event of a power failure, the driver's door and luggage compartment may be locked and unlocked by the standard key without remote control function.

Added anti-theft security over and above the immobiliser fitted as standard is ensured by the freewheel lock cylinders on the door, luggage compartment lid and steering locks, the fact that there is no lock cylinder any more on the front passenger's door, the systematic protection of all points which might potentially be reached by a thief using special tools, the introduction of kinematics modifications within the lock mechanism making manipulations far more difficult, and last but not least automatic activation of the central locking when locking the vehicle as such. In this position the door release knobs and inner door handles are switched to their freewheeling position, ensuring that the doors cannot even be forced open. This elaborate theft protection system featured on the new 7 Series is then rounded off by BMW's proven system of hard-to-copy four-web keys with more than 12,000 different coding options.

Central locking with remote control offers the following additional functions:

- Comfort opening/closing of windows and the sliding/vent roof
- Separate opening of the luggage compartment lid (also from the passenger compartment)
- Hotel locking function for the luggage compartment and glove box (activated only by the car key)

Other functions integrated in the system are the automatic dimming of the car's interior lights and the crash sensor automatically opening the central locking in the event of a collision, switching off the fuel pump and switching on the interior lights (as well as the hazard warning flashers if the car is fitted with an anti-theft warning system available as an option).

This anti-theft warning system (standard from the 750 i) ensures an even higher level of all-round security, electronically monitoring the side windows and rear windows, the doors and door locks, engine and luggage compartment lids, the glove compartment, the radio and ignition, and responding in addition to any change in the angle of the vehicle or to the car being towed.

Should anybody try to get into the car a separate alarm signal is sounded for 30 seconds, the hazard warning flashers and headlights flashing on and off for five minutes. And if somebody attempts to start the engine the DME immobiliser will automatically be activated, the engine not firing and the alarm cycle being triggered once again.

The anti-theft warning system is activated and deactivated automatically when locking and unlocking the car.

Bumpers

The bumpers feature a single-piece all-round plastic cover and are fully integrated in the contours of the car both front and rear, extending round at the sides all the way to the wheel cut-outs. With the exception of the

lower spoiler section finished in a contrasting colour, the bumpers are painted in body colour.

At the top the bumpers are enhanced by chrome embellishment strips, the bumper surfaces themselves deform in an accident and then return to their original shape, and the bumper strips are subdivided into three sections for exchanging each section easily and at low cost (including the number plate support).

The central area of the front panel moved slightly to the back beneath the bumpers as such comprises the fog lamps and vents for cooling the brakes and feeding cool air into the passenger compartment. The integral front and rear aprons fitted one level lower are fully elastic in order to avoid damage.

The bumpers rest on an aluminium support designed as an open-end U-profile, the entire bumper system fully regenerating to its original shape after impacts either front or rear at a speed of 4 km/h, hydraulic impact absorbers therefore avoiding even the slightest damage. In head-on and rear-end collisions at speeds of up to 15 km/h, in turn, structural damage to the body of the car is avoided by additional deformation elements ("impact boxes") integrated in the impact absorbers. In such a case any components damaged in a collision may be replaced easily and at a low cost.

In impacts at a speed of more than 15 km/h the next components to deform at predetermined points behind the impact boxes are the engine mounts, which are particularly easy to repair at the front.

Rear-view mirrors

The effect of the rear-view mirrors on the car's streamlining has been reduced by no less than 50 per cent thanks to the mirrors' new aerodynamic and aero-acoustic design ensuring an even smoother flow of air around the A-pillars. The result is much less noise while at the same time the mirrors remain very clean and help to keep the outside windows clean, too.

Both the driver's and front passenger's rear-view mirror are electrically adjustable as a standard feature and are heated as a function of the outside temperature. Another highlight is the use of aspheric glass to reduce the blind angle encountered with mirrors of conventional design. Adjustment of the mirrors is incidentally very convenient thanks to a switch in the armrest on the driver's door.

Steel sliding/vent roof

An electrically operated steel sliding/vent roof together with a sliding headliner is available as an option. This sunroof features the new vent position already introduced on BMW's 3 and 8 Series models, meaning that the headliner moves back 120 mm whenever the roof is raised to its vent position. This provides positive engagement of the various sunroof components ensuring even better sound deadening, avoiding even the slightest draught and efficiently dissipating heat from the interior when the car is parked.

The switch for opening and closing the roof features an integral fingertip function providing an additional trap release effect. Another feature is that the sunroof can be opened and closed via the central locking comfort function (just like all the windows).

Roof rack system

As an option the new BMW 7 Series comes with a multi-functional roof rack system featuring aerodynamically optimised profiles, designed for convenient use of all roof racks and attachments available from BMW. A further point is that the roof rack has a rapid-action lock and is able to carry a maximum load of 100 kg or 221 lb.

Streamlining

Without any disadvantages in terms of function, the various models in the new 7 Series have much better streamlining than their predecessors:

730i	$c_x = 0.30$	$c_x \times A = 0.67$
740i	$c_x = 0.30$	$c_x \times A = 0.67$
750i	$c_x = 0.32$	$c_x \times A = 0.70$

The superior streamlining of the new 7 Series results, not least, from an optimum synthesis of design, spaciousness, clear lines and dimensions, and good aerodynamic features such as the low drag coefficient and lift and side forces carefully tuned to the specific design of the axles.

An important target in optimising the car's streamlining from the very beginning was to blend all these requirements made of the new 7 Series into one harmonious all-round concept.

Even without the styling features typical of a highly streamlined car, such as a steeply raked windscreen, specially contoured spoilers and additional wind deflectors, the new 7 Series offers the very best in streamlining and aerodynamic efficiency.

Indeed the following measures allow a very smooth flow of air around the entire car, with virtually no turbulence or swirl action:

- The rounded-off front section allows air to flow smoothly from the front end of the car along the floor pan to the rear.
- The under-pressure thus created beneath the front end of the car reduces front axle lift and thus contributes to the 7 Series' magnificent driving characteristics.
- Flexible air ram "lips" in front of the front and rear wheels ensure a smooth, low-resistance flow of air round the wheels.
- The very smooth side-sills enhance this effect, again keeping the wheels free of any turbulence.
- Reduction of turbulence and flow effects ensured by the engine compartment being smoothly "cocooned" all around as well as by the special structure of the floor pan provides efficient lift control both front and rear. Fitted at an angle of 6°, the rear-end diffuser also has

a positive effect on the car's driving characteristics and helps to keep the rear light clusters clean even in bad weather.

- The aerodynamic rear-view mirrors designed especially for a smooth flow of air around the A-pillars on the new 7 Series reduce the usual swirl effect by an opening between the body of the car and the mirror housing, in this way minimising wind noise and any contamination of the side windows.

Interior features

The entire interior of the car is all-new in every respect, every feature being characterised by flowing, harmonious lines, top-quality materials, new functional details, a further improvement in ergonomics, and of course maximum comfort.

Instrument panel

The instrument panel and the lining beneath it feature a soft, natural surface, very pleasant to the touch. In the 750i the lining beneath the instrument panel is in leather. To enhance the harmony of colours, the instrument panel comes in a choice of no less than four different colours, each providing a perfect match for the colour of the interior.

Beneath the front passenger airbag fitted as standard is a spacious glove compartment, lockable and easy to open and close from the driver's seat. The driver himself has an additional storage box in the lower panel to the

left of the steering wheel, the release handle for disengaging the footbrake being positioned conveniently just above this additional compartment.

The centre console also finished in the same colour as the interior is angled towards the driver in BMW's typical design. Seen from top to bottom, it incorporates behind a folding wooden panel the audio control unit and an additional storage box for coins, the Multi-Information Display (MID) or the controls for the digital Sound Processor (DSP) or, as an alternative unit integrating both of these functions, the on-board monitor, which is then followed by the air conditioning controls and, last but not least, by an additional row of switches.

This central panel merges directly into the tunnel console with wooden trimming beneath the gearshift or selector lever, the hazard warning flasher and central locking button positioned in the middle, and a closed storage compartment complete with socket and coin box, or as an alternative in the smokers' model, an illuminated ashtray with tip-release function. At the front side of the tunnel console comes yet another storage box, or as an option, a special cassette holder with armrest on top.

Another option is the centre armrest adjustable in fore-and-aft direction (standard on the 750i) and featuring an integrated box with separate cover. And as part of the communication package, the telephone is integrated right in the middle of the folding armrest. The 750i and all long-wheelbase versions are fitted in addition as standard with retractable beverage holders at the front of the centre console and the rear of the tunnel console.

Linings and interior panels

The door lining is a single-piece panel consisting of laminated foam and a leatherette surface again very pleasant to touch. The moulding strips beneath the windows and the centrepiece beneath the extra-large, softly padded armrests with an ergonomically integrated grab handle are also finished in the same kind of surface material. The door lining above the armrest is generally finished, like the armrest, in leather, harmoniously and functionally integrating the chrome-plated door opener, while the switches for operating the electric windows are integrated in the door grab handles. The lower door lining sections, in turn, are covered by a soft velour carpet and accommodate an open storage box as well as a closed box with lid in the front doors. The rear doors also come with an open storage box and an ashtray with swivel function both left and right. The long-wheelbase versions have an additional covered box as well.

The moulded headliner in two colour variants in fabric finish and with soft foam padding ensures improved sound-deadening, thermal insulation as well as good looks, at the same time encompassing the fabric-covered sun visors with individual illumination, and four grab handles. The upper covers on the A, B, and C pillars consist of the same high-quality fabric as the roof lining itself.

The wide range of high-quality wooden trimmings either in silk-mat "Vavona" or, as an option, in high-gloss walnut (standard on 750i) adds a very special touch to the exquisite interior of the car. This wooden trimming extends throughout the instrument panel from one side to the next, with a folding cover above the audio unit, and continues along the doors beneath the moulded strips, while in the middle the wooden

trimming extends down into the centre console, also comprising large areas of the tunnel console. On the 750 i there is additional wooden trimming on the B-pillars, at the top rear of the front seat backrests, and on the courtesy lights installed in the C-pillars.

The interior rear-view mirror and the exterior mirrors are available as an option in electrochrome finish with automatic anti-dazzle function, the particular advantage in this case being that the mirror automatically removes any glare by its noiseless, infinitely variable anti-dazzle function while preventing any double images.

The floor carpeting in high-grade soft velour quality comes in no less than 7 colours matching the interior and provides a very good noise-insulating effect thanks to the contoured sound-absorbing layer.

The velour-finish parcel shelf with additional noise insulation is also available in 7 different colours and integrates not only the air extraction ducts but also, where applicable, the electrical sunblind and subwoofer loudspeakers.

With a capacity of 500 litres or 17.5 cubic feet, the luggage compartment and boot lid are lined all round in graphite-coloured divelour, the compartment itself being smooth at all sides and amply dimensioned. Lashing points and a luggage compartment net inside the loading sill help to keep everything in position. The car jack is accommodated at the right-hand side beneath a folding cover. And last but certainly not least, the tool kit with warning triangle, now a standard feature on all BMWs, is integrated in the boot lid lining.

Seats

Depending on the model and options fitted, the front seats come in four different variants:

- Manually adjustable seats
- Electrically adjustable seats
- Electrically adjustable comfort seats
- Electrically adjustable contour seats

All variants of the front passenger seats feature seat occupation detectors. The seats themselves are based on the proven design in the 7 Series, adjustment to the rear being extended by 20 mm or 0.8". They have furthermore been improved significantly in terms of long-term quality by the addition of pre-tensioned adjustment units for permanently eliminating any adverse play.

Seat comfort has also been enhanced by making the seat frame wider, by optimising the seats in terms of climate control, and by using headrests with soft foam covers. Footwell comfort for the rear passengers has been improved by moving the seat rails to the outside, the seat rails themselves now being covered to provide an even more attractive look.

The manually controlled "standard" seats on the 730i come with the proven operation functions already featured in the 3 Series, combined with particularly sensitive fore-and-aft adjustment. The entire seat is covered in flock velour, a convenient pocket being integrated behind the backrest.

The electrically operated seats on the 740i are known from the former 7 Series, the seats themselves being finished in woven velour but otherwise identical to those in the 730i.

The new electrically operated comfort seats are finished entirely in Montana leather. Fitted as standard in the 750i, these seats excel above all through the additional adjustment of the upper third of the backrest to the front by a maximum angle of 35°. This gives the driver far better shoulder support, while offering the front passenger a very relaxed and comfortable seating or reclining position in conjunction with the softly padded comfort headrest. All this is then rounded off by the lumbar support adjustable electrically for height and with new, very convenient operation, plus a novel memory function on the driver's seat with very smooth, gentle operation and two adjustment speeds for rapid seat adjustment, on the one hand, and slow fine adjustment, on the other. A folding pocket is integrated at the rear of the front seat backrest.

An option available from autumn 1994 is the contour seat combining all the features of the comfort seat with special sports padding along the seat bottom and backrest as well as additional adjustment of seat height. This seat does not come with a lumbar support.

As an option all seats are available with a new, even more efficient, infinitely adjustable electrical heating system now also including the side supports in the seat bottom and backrest. It is operated by means of a control knob fitted in the switch panel of the central console.

A further option is the lumbar support also available on the "standard" seat of the 730i and 740i.

Rear seats

The comfortable rear seats in individual body contour come complete with a folding centre armrest incorporating a large storage compartment and, as an option, a ski-bag. To use the ski-bag, the armrest now only has to be tilted down and no longer needs to be removed. Above the centre armrest there is an additional compartment housing the first-aid kit. The pleasantly padded headrests can be pushed in relatively far to provide good visibility to the rear.

As an option from the 740i (and standard on the 750iL) the rear seat bench may be replaced by two extra-comfortable individual seats with an electrically adjustable backrest and lumbar support as on the front comfort seats. In this case the lower section of the backrest may be tilted to the rear by up to 8°, the upper part of the backrest moving to the front at the same angle. Whenever the seats are not occupied, the electrically adjustable headrests automatically move down to their lowest position. Another highlight worth mentioning is that these seats come with an even more efficient, infinitely controllable electrical heating system and ski-bag.

Seat belts

The front seats come with conventional seat belts with automatic belt height adjustment as a function of the seats' fore-and-aft position. This system is combined with pyrotechnic belt latch tensioners actuated by the central airbag control unit irrespective of airbag actuation as such. The two outer rear seats feature BMW's ergonomic, inverted-geometry belt arrangement; the middle seat comes with an inertia-reel lap belt.

Heating and climate control

To satisfy even the most discerning customer, the BMW 7 Series comes as standard with a fully integrated heating and climate control system, or from the 750i, with integrated heating and automatic air conditioning available as an option also on the other models.

Individual climate control on the driver's and passenger's side, precise electronic temperature control, air supply largely independent of road speed, an extra-quiet ventilation blower, a special air filter and air recirculation round out these sophisticated systems.

Air conditioning

The air conditioning has been significantly improved over the system found in the previous model. As with the automatic air conditioning, for example, air drawn into the car from outside may be filtered not only by the standard microfilter, but also by an activated carbon filter. This substantially improves the quality of air and minimises any contamination of the condenser.

A number of further features help to significantly reduce the noise level, while optimised ram pressure compensation minimises any draught within the car. Operating comfort has been improved significantly by infinite electrical adjustment of all air distribution nozzles via a central electrical drive system, the blower switch in maximum output position providing an automatic defroster function.

In all other respects, the control console features the usual arrangement with all instruments in typical BMW design.

Automatic air conditioning

The automatic air conditioning in the new 7 Series is a consistent improvement of the unit already featured in the former model. Numerous modifications have been made to optimise climate and control functions, comprising not only similar measures to those already described in connection with the "standard" air conditioning to improve noise control and avoid draughts, but also a combined micro-/activated carbon filter and automatic air recirculation.

Now the air inside the car is also filtered in the air recirculation mode, the a/c compressor only being switched on where necessary in order to optimise fuel economy.

Temperature control within the passenger compartment has been improved considerably by separately adjustable stratified temperature control now combined with individual temperature control on the rear seats and additional use of residual engine heat for extra comfort in cold weather.

The proven concept of providing separate temperature control on the driver's and front passenger's side has been sensibly enhanced by additional separation of air supply volume.

A further enhancement of individual control is provided by manual programme buttons allowing the driver and passengers to vary air distribution according to their own personal wishes.

The control concept for the automatic air conditioning is again an improved version of the proven control console already featured on the former model. Now all the electronic control units are fully integrated in the control functions as such, temperature management being optimised by the most advanced fuzzy logic. The temperature selected is presented clearly by high-grade displays, the control buttons and functions being illuminated by fail-safe LED's. Incidentally, the new BMW 7 Series is the first car to come with blue LED's instead of the conventional colours.

Air distribution is ensured by a number of extra-large air outlet nozzles, most of which can be adjusted to provide an exactly controlled flow of air and accurate dosage. The nozzles are located in such a way that the entire interior receives ample air flow without the slightest draught.

Especially the air supply nozzles adjustable for flow direction and with an opening/closing function have been perfectly integrated into the overall design of the instrument panel while providing optimum functions at the same time. The new multiple-plate grilles developed for this purpose brilliantly combine good looks with superior functionality, in this contributing quite significantly to the calm, pleasant ambience within the passenger compartment.

As an option the new 7 Series is available with programmable auxiliary ventilation (standard on the 750i) and programmable auxiliary heating including an auxiliary ventilator.

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Electrics/electronics

In designing and developing the electrics/electronics for the new 7 Series, BMW's engineers again focused in particular on greater functionality, improved comfort, enhanced safety, and added reliability, without however substantially increasing the number of control units and cable connections. And they have indeed reached this objective by minimising the number of system components thanks to the integration of control functions, electronic and electromechanical units, as well as a reduction in the use of separate cables through the consistent implementation of multiplex technology based on an on-board network with a hierarchical bus structure. Data are exchanged among the main systems via an overriding bus making multiple use of status and sensor signals. Then local buses take over any further-reaching exchange of data for the purpose of information and communication.

A further requirement fulfilled from the start was to make the on-board network even more flexible and adjustable, in this way accommodating all options and national specifications, while at the same time gearing the network consistently to the various coded control units for the suspension, engine and bodyshell functions. The result is a drastic reduction in the number of variants and the level of costs both in production and within the dealer network.

Reliability of the on-board systems has furthermore been enhanced considerably by using semi-conductor elements to substitute mechanical switching systems such as relays and conventional switches.

The cost of maintenance and repair has been further reduced by the improved self-diagnostic capability of the individual systems and the introduction of new diagnostic concepts such as fault-tree analysis and design concepts allowing easy assembly/disassembly.

New comfort systems

Remote control with exchangeable codes and an ample range for the central locking, as well as with additional functions such as comfort opening and closing of the windows and sunroof or separate opening of the luggage compartment lid.

Very accurate, automatic headlight range adjustment with the headlights themselves featuring gas discharge bulbs.

Automatic, electrochrome anti-dazzle function incorporated in the interior and exterior rear-view mirrors.

Multi-functional steering wheel for extra-comfortable operation of the radio, telephone, cruise control and air recirculation.

Cruise control with adaptive management, making allowance for the automatic transmission speed currently selected.

Temperature-controlled seat heating with infinite adjustment.

Courtesy lights with automatic dimming function and soft-on/soft-off management plus additional activation also via remote control.

Soft Close Automatic on the luggage compartment lid.

Single-operation fingertip control for opening and closing all windows.

New safety systems

All-new generation of airbag/belt latch tensioner activation unit with integral sensors for the driver and front passenger and vehicle-specific, fully-coded activation curve making allowance for the direction of travel upon impact and proper use of the seat belts.

Seat occupation detector on the front passenger's seat to avoid activation of the airbag when not required.

Switchcord trap-release function on all windows and on the sliding/vent roof.

Electronic immobiliser.

Anti-theft warning system with angle alarm, roll-away security unit, interior protection and automatic activation when locking the car.

Battery

All models come as standard with a 92 Ah battery fitted in the luggage compartment at the rear right. A 110 Ah battery is fitted in cars requiring

extra power reserves, for example on account of the options installed. To ensure reliable starting certain power consuming items are switched off in exceptional situations (e.g. inordinately high consumption when vehicle is stopped, a drop below minimum battery voltage) and automatically reactivated when the battery charge returns to normal.

Light system

Headlights

Typical BMW dual circular headlights for the high and low beam beneath a common glass cover, as on the 3 Series.

Low-beam headlights

Free-form-designed ellipsoid-reflector system with either halogen or xenon bulbs. The xenon lights come together with highly accurate, automatic headlight range control.

High-beam headlights

Free-form-designed paraboloid-reflector system with new light distribution concept and H7-halogen bulbs.

Fog lamps

Free-form-designed paraboloid-reflector system with clear glass cover.

Rear lights

Single-piece rear-light clusters with double-light cover to enhance three-dimensional impression. Rear lights in two-chamber technology with two bulbs on each side.

A new, fully diagnosable system has been developed for switching and monitoring the car's exterior lights, special software being used for logical switching functions. The result is a considerable reduction of wiring density, as well as a far smaller number of fuses and light switches. Virtually all relevant functions are now grouped together in one single unit.

Courtesy lights

The interior of the car is illuminated by no less than three courtesy reading lights, plus access and door warning lights on all doors and vanity lights for the driver and front passenger. The 750i/L comes additionally with indirect illumination in the rear seat area and four footwell lights.

Instruments

Carried forward from the former 7 Series and retaining the typical BMW look, the instrument cluster now features a permanent outside temperature gauge complete with a sound signal for frost conditions; the text display for presenting Check/Control, on-board computer, radio and telephone information has been expanded from 16 to 20 characters.

The display instruments and tell-tales are now illuminated by fail-safe LED's, the instrument cluster itself being able to communicate through a high-performance and truly versatile bus system. Diagnostic capacity has been enhanced substantially by expanded test functions and new diagnostic methods, the introduction of an exchange part recycling concept reducing the cost of maintenance and spare parts for the customer.

Audio and communications systems

BMW's objective in developing these systems was to logically combine all relevant functions in one unit, in this way enhancing ease of control and the optical integration of components in the vehicle, at the same time providing flexibility for the introduction of new features, such as RDS-TMC (Traffic-Message-Channel). Another target was to improve sound quality in general and radio reception quality in particular with the new audio systems, in this way satisfying even the most discerning purchaser. And last but not least, the task faced by BMW was to integrate not only telephone, TV and videotext functions, but also - as a first-ever achievement in Europe - a navigation system.

The result of these requirements is a Multi-Information Display (MID) fitted as a "standard" unit and an optional on-board monitor providing a complete, all-round solution. As a subsystem there is also a special car-specific radio with its main control functions integrated within the Multi-Information Display or, respectively, on-board monitor.

MID and MID radio are standard features of the new 7 Series.

To offer absolutely the very best solution in sound quality and acoustics, the new 7 Series offers not only the well-known BMW HiFi active loudspeaker system, but also a compatible, high quality TOP HiFi system with subwoofer terminal stages and integral digital sound processing (DSP) with equaliser.

Multi-Information Display (MID)

The Multi-Information Display is fitted in the centre console beneath the radio and comprises, together with appropriate switch controls, the operating and display functions of the radio, cassette player, clock, optional on-board computer, CD changer, telephone, and auxiliary heating. Flexible use of the keys and the display as such reduces the number of controls quite significantly.

MID radio

With the exception of the MID control functions, this radio is the technical equivalent of BMW's well-known Bavaria C Business RDS radio, incorporating in this case a four-aerial diversity system to optimise reception quality. Remote control of the radio is provided most conveniently via the multi-function steering wheel fitted as standard, an additional display being included in the instrument cluster.

On-board monitor

The optional on-board monitor is housed in the centre console beneath the radio and fits in very harmoniously with its wooden trimming on top. A highly flexible unit, it integrates not only the MID radio but also, over and above the standard MID functions, additional features such as the on-board computer, sound control, TV and videotext as well as optional features such as the CD changer, digital sound processor, auxiliary heating, the telephone including address memory, and even the navigation system.

The screen itself is a high-resolution, video-compatible liquid colour display, while menu-oriented user guidance via the monitor allows simple, uncomplicated operation in "roll mode". A video recorder and even a second screen may be connected to the system if desired.

Use of the TV function while driving is not possible, with the exception of course, of a second screen subsequently fitted in the rear on request.

Navigation system

Starting in September 1994, BMW will become the first European manufacturer to offer a navigation system ex works for the new 7 Series. Based on the CARIN system developed by Philips, this unique navigation unit is a joint development by BMW and Philips and is integrated in the on-board monitor already described.

Using voice messages and various optical signals presented on the monitor, this navigation system guides the driver to a predetermined destination. The destination as such is entered in the dialogue mode, the driver specifying the city, street, etc. he wishes to reach. In addition, he has the option to select destinations directly on maps presented on the screen. These digitally processed maps are recorded in three languages on a compact disk providing a wide range of additional information available on request, such as restaurants, hotels, and service stations. In the interest of exact guidance and route planning, the current position of the vehicle is determined by multiple-point navigation and map-matching as well as through a satellite-based ground positioning system (GPS).

Selecting random parameters such as secondary roads or expressways, the driver may influence route planning himself. He also has the option, when the car is parked, to have various general maps on different scales presented on the screen.

Audio systems

Over and above the six-loudspeaker stereo system fitted as standard and the optional 10-channel active HiFi system with active frequency control and a maximum output of 150 Watts, the new 7 Series is available with another, even more sophisticated alternative for the customer who will only settle for the very best in acoustic quality. This is BMW's

TOP HiFi with Digital Sound Processing

This extremely elaborate, high-end sound system is based on BMW's well-known active HiFi system, but incorporates even better loudspeakers and, additionally, a subwoofer box with four loudspeakers in the parcel shelf. Added to this there is a special 14-channel TOP HiFi amplifier providing a total output of 315 Watts plus vehicle-specific, speed and volume-related equalising, active frequency control, speed-related dynamic compression, three-dimensional simulation (with three different dimensional sound effects memorised by the system), loudspeaker transmission time compensation, and an equaliser individually programmable through the DSP controls.

Various amplifier functions may be managed via the DSP control console: As an example, the driver may select one of the three permanently stored dimensional sound modes or opt for one of the three randomly selectable sound modes determined by the driver himself.

Car telephone

A car telephone has become something of a standard feature these days in luxury performance cars such as the new BMW 7 Series. It is therefore only obvious for BMW to offer a special telephone tailored to the car and fitted right from the start at the factory - a telephone which blends perfectly with the overall concept and offers the user virtually every imaginable convenience.

On cars fitted with this communications package, the BMW telephone and control console as well as the map reader are all integrated in the centre armrest.

The telephone may be operated either from the multi-functional steering wheel for optimum convenience or via the Multi-Information Display or on-board monitor, in which case an address memory and automatic dialling function are also available (such information benign presented at the same time by the display in the instrument panel). In conjunction with the on-board computer, there is furthermore an optional hands-free function provided by a microphone with optimised acoustic control and a loud listening function using the audio loudspeakers.

BMW AG

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Suspension and chassis

In determining the suspension and chassis qualities of the new 7 Series, BMW was obviously committed to a very high standard in every respect. After all, the task facing our engineers was to improve significantly on the standard-setting quality already achieved by the chassis and suspension of the former 7 series, still acknowledged as a "young" car today.

Only a truly outstanding vehicle concept with numerous optimised features and some very special highlights was therefore able to meet this tough demand, the objective set appearing at first sight to be a seemingly irreconcilable conflict of interests: To further improve the already magnificent standard of driving safety and agility offered by the "old" 7 Series while at the same time substantially enhancing the car's driving comfort.

Though seemingly contradictory, these goals have been realised in the new 7 series to an unprecedented degree. The starting point was provided by the all-new integral rear axle with its elaborate elastokinematics, the revised double-joint spring strut front axle, extra-large 16-inch wheels, a much longer wheelbase and wider track, plus, not least, bodyshell rigidity of 25000 N/mm, far superior to anything seen in the past. This eliminates any undesired steering effects almost completely and further enhances the positive effect of the new rear axle.

Last but not least, a significant feature of BMW's vehicle concept to be mentioned here is the very good axle load distribution featured by all BMWs since the introduction of the second generation 7 Series.

In practice this concept ensures magnificent roll comfort, optimum driving characteristics regardless of load and road speed, excellent handling, precise steering control, neutral response under load change up to extreme limits in bends, outstanding driving characteristics in winter ensured in particular by the rear axle retaining its camber and castor alignment regardless of load, very good driving stability even when towing a trailer (allowing far higher trailer loads than with the former model), outstanding vibration comfort, and last but not least, virtually no response to periodical excitation caused, for example, by wheel imbalance.

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Rear axle

The integral rear axle is a new, patented multi-arm design offering excellent track control and motoring comfort, the two most important features of a modern suspension. Indeed, the rear axle is a crucial factor in achieving the optimum driving and comfort characteristics of the new 7 Series.

Forces transmitted to the suspension at the wheel/road contact point move through four track control arms between the wheel bearings and the subframe. Brake, drive and side forces are all handled with optimum results thanks to the special configuration of the track control arms, without any adverse elastic steering angles building up on the wheels. As an example, brake forces are absorbed by the lower trapezoid control arm (or swinging control arm) particularly suited for this purpose thanks to its hollow-profile panel design. Longitudinal and side forces are absorbed furthermore by the two upper control rods, the guide and transverse control arms. And the integral control arm between the wheel bearings and swinging arm, from which the axle as such has its name, transmits longitudinal forces in particular to the swinging arm without any unpleasant or critical rotational vibrations building up in the process.

To ensure excellent roll comfort the track control arms are connected to the subframe via rubber bearings, the front swinging arm bearing on the rear axle subframe providing a longitudinal damping effect so important for roll comfort. The rear axle bearings are very soft in longitudinal direction, ensuring an additional longitudinal damping effect for the entire rear section of the car and thus contributing significantly to the new 7 Series' exemplary standard of roll and noise comfort.

The subframe is a modern welded tubular structure with torsionally and flexurally rigid profile sections not in any way distorting the sophisticated axle kinematics. The subframe also accommodates the final drive, resting on elastic mounts and therefore separated from the passenger compartment by a dual-elastic system efficiently eliminating any transmission of vibrations from the drive train.

Like the front axle, the integral rear axle may be completely preassembled and aligned for very easy final assembly and repair, since measurement of wheel position is not required after fitting or removing the axle.

Kinematics/elastokinematics

Both the kinematics and elastokinematics configuration meet all the demands made of a modern suspension these days. As a result, there is virtually no adverse change of track control angle when the main springs are compressed or move out. And the change in camber as a result of load or driving conditions is specially tuned to provide optimum behaviour in bends and a maximum service life of the car's tyres on straightaways. An additional contribution to the outstanding suspension comfort offered by the 7 Series is made by highly efficient anti-dive and anti-squat.

Elastokinematic behaviour, i.e. the elastic behaviour of the wheel guidance components' own integral elasticity, depends largely on the position of the two upper track control arms. Through their specific configuration and orientation, these two control arms compensate or even eliminate any change in track angle possibly caused by elasticity inherent

in the suspension components. Under high lateral acceleration the toe-out position of the outer wheel in a bend is furthermore increased (with a change in steering angle towards the inner side of the bend), thus giving the car very accurate, stable and slightly understeering behaviour even in an extremely fast bend.

Front axle

The double-joint spring strut front axle with aluminium track control arms and thrust rods is a further development of the axle already featured on the former 7 Series, once again improving the car's directional and steering behaviour, tracking stability, and handling.

The axle is now combined with a new, highly rigid but light subframe consisting of a cross-shaped, welded tubular structure. The increase in bodysHELL stability provided in this way helps to avoid any undesirable steering behaviour resulting from adverse elasticity. A further advantage of this design concept is that the front axle may be preassembled as one complete unit, even the toe position of the wheels being set in advance with all the benefits already described with reference to the rear axle. The larger hydraulically dampened thrust rod bearings improve roll comfort and make the car largely immune to vibrations caused, for example, by wheel imbalance.

Twin-sleeve gas pressure shock absorbers built in "wet spring strut design" on the front axle ensure in conjunction with the optimised damper oil a very good and smooth response as well as supreme vibration and noise comfort even in the most extreme temperatures.

Use of barrel-type springs with varying spring wire diameter helps to make the entire front end of the car very low and elegant, the springs themselves being more compact than conventional units.

Steering

The 8-cylinder models feature hydraulically assisted circulating-ball steering with automatic pressure point adjustment. An option available on these models is BMW's electronic, road speed-related Servotronic power steering standard from the 750i.

The steering column may be adjusted individually both for reach and height, in each case by a total distance of 40 mm or 1.50". The steering lock, in turn, comes with a freewheel lock cylinder for extra security, ideally complementing the break-proof steering wheel lock in slip-clutch design. A further contribution to such extra safety is provided by the proven four-web key, which is very difficult to copy.

Motoring comfort is enhanced to an even higher degree by the newly developed multi-function steering wheel fitted as standard. Measuring 395 mm or 15.555" in diameter, this unique steering wheel comprises not only the airbag fitted as standard, but also the control buttons for the radio, cruise control, air recirculation, and telephone. All buttons are highlighted by adjustable telltale illumination. The radio/telephone function chosen in each case is presented by the display in the instrument cluster.

A sports steering wheel featuring a European-size airbag and measuring 385 mm or 15.15" in diameter is available as an option incorporating integral cruise control.

Brakes

Moving up from 15" to 16" wheels, the new 7 Series is able to accommodate an even larger brake system with very ample safety reserves. This increase in the size of the brake discs provides an even larger swept area and, as a result, less wear of both brake discs and linings.

Front wheel brakes

The 730i comes with vented discs measuring 316 mm or 12.44" in diameter and 28 mm or 1.10" in thickness and featuring new four-piston aluminium swing callipers.

The 740i features vented discs measuring 324 mm or 12.76" in diameter and 30 mm or 1.18" in thickness and incorporates single-piston brake callipers.

The 750i features vented discs again measuring 324 mm or 12.76" in diameter as well as newly developed two-piston swing callipers.

Rear wheel brakes

The 730i and 740i feature non-vented discs measuring 324 mm or 12.76" in diameter and 12 mm or 0.47" in thickness, and have single-piston swing callipers.

The 750i has vented discs measuring 328 mm or 12.91" in diameter and 20 mm or 0.79" in thickness, and featuring single-piston swing callipers.

Operation of the brakes

With the vacuum brake servo featuring a particularly long stroke, a compact single brake servo is quite sufficient instead of a tandem brake servo, providing the same performance and safety reserves thanks to the modified brake pedal transmission ratio. This saves space, weight and money.

Foot-operated parking brake

To provide better control, easier access to the brake, and a further improvement of motoring comfort, the new 7 Series is the first BMW to feature a foot-operated parking brake with the further advantage that there is now even more space on the wide centre armrest sufficiently large to accommodate the car telephone. The footbrake incorporates a dual-servo drum brake measuring 180 mm or 7.09" in diameter and integrated in the rear brake discs.

Wheels/tyres

The wheels and tyres of a car are becoming ever more important on road today. Through their features they influence not only driving characteristics and the quality of the brakes, but also other factors of increasing significance, such as the external noise level, fuel economy, and, as a result, exhaust emissions, as well as motoring comfort and wear.

Changing from 15" to 16" wheels, the new BMW 7 Series runs on larger tyres subject to far smaller loads, in particular on the rear axle due to the reduced camber provided by the integral axle configuration. As an example, tyre pressure has been reduced particularly at the rear, providing a further increase in roll comfort without impairing the car's dynamic driving characteristics.

In very close co-operation with leading tyre manufacturers, BMW's engineers have succeeded furthermore in reducing tyre noise by up to 2 dB (A) or 40 per cent, inter alia through the use of new tyre tread. And roll resistance, particularly important for fuel economy, has been improved significantly, as has the running smoothness of the tyres and their susceptibility to developing flat spots.

The following wheel/tyre combinations come as standard:

730i	215/65 R 16 7.5 J x 16 cast light-alloy in BMW styling
740i	215/65 R 16 7.5 J x 16 cast light-alloy in BMW styling
750i	235/60 R 16 7.5 J x 16 cast light-alloy in exclusive styling

In addition, the following wheels are available as an option on all models:

245/55 R 16 8 J x 16 cast light-alloy in cross-spoke styling

245/55 R 16 8 J x 16 forged light-alloy in multi-spoke styling

Trailer loads

Trailer loads on the new 7 Series have been increased substantially and are now as follows:

	unbraked	Trailer load	
		up to 8%	braked up to 12% gradient
730i/L	750 kg	2100 kg	1900 kg
730iA/L	750 kg	2100 kg	2000 kg
740i/L	750 kg	2100 kg	2100 kg
740iA/L	750 kg	2100 kg	2100 kg
750i/L	750 kg	2100 kg	2100 kg
750iA/L	750 kg	2100 kg	2100 kg

Electronic Damper Control (EDC III)

The third generation of Electronic Damper Control is being introduced in the BMW 7 Series as a standard feature on the 750iL and an option on all other models. This grid-controlled, highly versatile adaptive damper

control system so far exclusive to the 850CSi provides an ideal solution to the old conflict of interests encountered by suspension engineers when seeking to provide a perfect combination of motoring comfort and driving safety. The safety requirements made of a top-of-the-range automobile obviously put a limit to the search for perfect comfort and a very smooth, calm style of motoring, especially on bad roads and with a conventional chassis. Now these limits have been substantially improved by EDC.

EDC III gives the driver the choice between a universal, adaptive automatic program and a sports program.

In the automatic mode the damping effect is varied adaptively as a function of the car's current driving condition, thus providing infinite adjustment throughout the entire range from very comfortable to highly dynamic and sporting. The damper setting chosen by the system always follows the fundamental rule to provide as much comfort as possible with maximum safety reserves whenever necessary.

Where required, the damper setting is modified extremely quickly throughout the entire range within a maximum period of 30 milliseconds.

The sports program, in turn, gives the driver the hardest damper setting for a particular sporting and dynamic style of motoring.

Self-levelling

The 750i and all long-wheelbase versions of the new 7 Series come as standard with self-levelling at the rear axle. Featuring hydropneumatic

suspension and load-related damping, this system consistently maintains the car's dynamic spring travel regardless of load, substantially enhances motoring comfort when carrying heavy loads, and maintains the car's full ground clearance and angle of slope. These features alone make self-levelling simply ideal for motorists often using their car to tow a trailer.

With axle geometry remaining virtually unchanged, there is also a further improvement of traction on slippery surfaces and a reduction of tyre wear.

ABS/ASC/DSC driving safety systems

As a significant contribution to active safety, the new 7 Series comes not only with ABS but with two driving safety systems that have already proven their merits in the past: Automatic Stability Control (ASC) available as an option on the 8-cylinder models and Dynamic Stability Control (DSC II) fitted as standard exclusively on the 12-cylinder models, each of these units incorporating its own traction system.

As with ABS, the basic idea behind these systems is to offer the driver active support in critical situations, correcting any mistakes he might make at the wheel, and making driving much easier and safer even in the worst weather and on very bad roads. Last but not least they allow the driver to reach his destination relaxed and safe. The traction system featured on the car performs virtually the same function as a fully controlled limited-slip differential, substantially increasing traction on slippery surfaces or surfaces with different frictional coefficients, as well as on gradients.

In the interest of active safety, it is also BMW's philosophy to inform the driver when these systems have been activated, in this way offering him first-hand information on road conditions and the fact that his car has reached an extreme handling point. This information is provided visually by a telltale conveniently positioned in the instrument cluster.

Automatic Stability Control (ASC)

ASC on the 8-cylinder models is a wheel-slip and traction system integrated into the ABS anti-lock brakes. Compared with the previous system, this new ASC now offers an even higher standard of stability and traction.

Comparing wheel rotation speed front and rear and determining in this way whenever excessive wheel slip resulting from the drive wheels spinning or locking might endanger the car's stability, Automatic Stability Control reduces engine torque to the extent required regardless of the accelerator position (or, alternatively, increases engine torque when the drive wheels are locked). To ensure a quick response and superior control comfort, no less than three control circuits interact within ASC: throttle butterfly adjustment, ignition timing adjustment, and combined cancellation of fuel injection and ignition (or, whenever it is necessary to reduce drag forces with the drive wheels locked, separate control of idle speed). Combined traction control is provided by an additional ABS/ASC management circuit with individual brake control on the two rear wheels, meaning that the rear wheel spinning in a given case is subjected to specific brake forces to provide the desired lock effect.

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In technical terms Automatic Stability Control represents an all-round system comprising Digital Motor Electronics (DME), the ASC/ABS control unit and, if the car is fitted with automatic transmission, electronic transmission control (ETC).

BMW's ASC system with traction control maintains the very good winter driving characteristics of the new 7 Series provided by good axle load distribution and the outstanding rear axle concept even on extremely slippery surfaces or roads with constantly varying frictional coefficients, in this way giving the driver the full benefit of the car's superior driving characteristics even in very bad situations.

Dynamic Stability Control (DSC II)

Proceeding from the ASC system, BMW developed Dynamic Stability Control (DSC I) introduced on the 850Ci in 1993 and followed by the second generation of this sophisticated system (DSC II) to be offered as of autumn 1994 on all 12-cylinder models of the new 7 Series and the 850i. This represents another consistent and significant step taken by BMW as the trend-setter also in the area of driving stability systems.

Introducing DSC I at the time, BMW became the first carmaker worldwide to offer a car stability system not only compensating for wheel slip, but also monitoring the lateral stability of the vehicle in bends and specifically reducing any tendency of the car to become unstable (under- or oversteering) by varying engine power accordingly to regain stability. All this is achieved by additionally considering the steering angle and lateral

acceleration, comparing the ideal position of the car calculated in this way with its current lateral and dynamic position.

Apart from numerous functional improvements such as adaptive slip thresholds for even better traction, DSC also takes (over and above its traction control function with intervention of the brakes) a first decisive step towards an entirely new driving philosophy by using the brakes in order to maintain the car's lateral stability in bends. Accordingly, wheel-related ABS control functions already integrated in the system are now used in bends prior to activation of ABS as such in order to substantially improve the car's stability.

This alone indicates the potential of the system for further development, the approach now taken by BMW for the first time in activating the brakes individually in order to stabilise the car obviously leading to an even more sophisticated active brake control concept of the type already demonstrated by BMW.

To save weight and space, DSC II for the first time integrates the ABS/ASC/DSC control unit as well as the ABS/ASC hydraulics in one common system.

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Engines and transmission

The new BMW 7 Series is entering the market with BMW's highly successful three- and four-litre 8-cylinder power units originally launched in early summer 1992. In autumn 1994 these power units will be followed by the totally revised and enlarged (5.4 litres) 12-cylinder featuring significant improvements in terms of fuel economy, emissions and torque.

The three-litre engine comes with BMW's proven five-speed manual gearbox with direct transmission in 5th gear, the four-litre unit features the new six-speed manual gearbox with an overdrive 6th gear already introduced in early 1994 in the 540i/840i.

The five-speed automatic transmission on 8-cylinder models will now feature Adaptive Transmission Management (ATM) already introduced in autumn 1993 in the 530i/540i and 840i.

A further highlight is that the 12-cylinder will also for the first time feature five-speed automatic transmission, again with adaptive management.

Power units

The power units of the new 7 Series once again underline BMW's supreme standard and the general objective to offer optimum noise and vibration control, supreme performance (and therefore active safety), very good reliability, simple maintenance and of course full compliance with the strictest emission management and noise limits as well as a substantial reduction in fuel consumption.

BMW's 8-cylinder engines

The new 7 Series is making its debut with the high-performance, high-torque, extra comfortable and economical V8 four-valve light-alloy power unit displacing either three or four litres. Performance data and specifications remain the same as before:

160 kW/218 bhp and 290 Nm (214 lb-ft) with the three-litre engine

210 kW/286 bhp and 400 Nm (295 lb-ft) with the four-litre power unit

In each case maximum output and maximum torque are developed at 5800 and, respectively, 4500 rpm.

The most essential features of this outstanding engine are as follows:

- Very light and compact V8 four-valve power unit with cylinders offset at an angle of 90°, 2997/3982 cc
- Crankcase, cylinder head and oil sump made of aluminium alloy
- Crankshaft running in five bearings
- Sintered, forged connecting rods
- Lightweight pistons with three piston rings
- Compression ratio 10.5:1/10.0:1 on the 3.0 and, respectively, 4.0-ltr power unit

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- Four-valve crossflow cylinder heads made of die-cast aluminium
- Compact combustion chambers with spark plugs in central position
- Lightweight valve drive with hydraulic valve play compensation
- Two overhead camshafts per cylinder head, each running in five bearings, with eccentrically arranged shaft journals to compensate for rotating cam and oscillating valve forces
- Primary drive by dual-roller chain to the two intake camshafts
- Secondary drive by one dual-roller chain each from the intake to the outlet camshaft
- Light, flow-efficient intake system made of recyclable plastic with long intake manifolds to provide supreme torque at low engine speeds
- Complete exhaust system made of high-grade steel with double-wall, air gap-insulated exhaust flow from the engine to the catalytic converter
- Secondary air injection on the three-litre engine, new trimetallic-coated catalytic converters activated at a temperature approximately 100° lower than before
- Ancillaries driven by maintenance-free, ribbed V-belt

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- Compact alternator with cool air intake and 100 A/1400 W output (or 140 A/1960 W as an option)
- Countershaft starter developing 1.7 kW (2.3 bhp)

Digital Motor Electronics DME 3.3 featuring:

- Fully sequential, cylinder-specific fuel injection
- Hot-film air mass meter
- Grid-controlled, adaptive dual oxygen sensors
- Adaptive idle speed control
- Solid-state, high-tension distributor system
- Cylinder-specific, adaptive knock control with four knock sensors
- Ignition circuit monitoring of primary and secondary circuit
- Self-diagnostic system and fail-safe features

BMW's new 12-cylinder power unit

After 7 years of success in the market, BMW's now legendary 12-cylinder power unit has been thoroughly modified for the new 7 Series and 850Ci. It now displaces 5.4 litres, develops a maximum output of 240 kW/326

bhp at 5000 rpm and generates a maximum torque of 490 Nm (361 lb-ft) at 3900 rpm.

Fuel consumption in the DIN combined cycle has been lowered by up to 11 per cent, in the city cycle by up to 19 per cent.

In revising this power unit, BMW's engineers have focused in particular on a substantial reduction in fuel consumption, fulfilment of the strictest exhaust standards, improvement of the car's already outstanding performance, further enhancement of motoring comfort, and full compliance with the toughest quality and reliability requirements.

All these objectives have been reached by means of the following design features and components:

Crank drive

- Increase in engine size from 5.0 to 5.4 litres by increasing bore from 84 to 85 mm (3.31 to 3.35") and stroke from 75 to 79 mm (2.95 to 3.11").
- Increase in the compression ratio from 8.8 to 10.0 with the car now running on 95 ROM unleaded premium but also being able to make do with 91 ROM thanks to adaptive knock control.
- Piston injection cooling for efficient heat dissipation despite the increase in torque and performance.
- Weight-optimised pistons with new piston crown design.

Cylinder head

- Roller-type rocker arms to reduce valve drive friction.
- Reduction of moving masses and spring forces in the valve drive system.
- Camshaft built as one unit with shrink-fit sintered cams.
- Very substantial reduction of valve overlap in the interest of enhanced idle quality.

Exhaust system

- Double-wall, air gap-insulated emission flow from the engine to the catalytic converter to ensure faster operation and a further reduction of noise emissions. Secondary air injection and new trimetallic-coated catalytic converters activated at a temperature approximately 100° lower than before.
- Three cylinders combined in each case to form one group in accordance with the firing sequence on the manifold.
- Extra-large, double-chamber catalytic converter with three monolithic bodies on each exhaust pipe.
- Substantially larger after-muffler.

- Entire exhaust system welded at all contact points.

Engine management

New DME M 5.2 Digital Motor Electronics featuring:

- Cylinder-specific, adaptive knock control.
- Transit compensation for improved behaviour when instationary.
- Highly comfortable automatic choke requiring only a brief turn of the key (one short pulse is sufficient).
- On-board diagnosis (OBD II) fulfilling US emission regulations and improving the car's ease of service.

Electronic engine power control

Introduction of Siemens' newly developed EML IIS electronic engine power control system with a high level of all-round redundancy ensuring optimum availability and safety, inter alia by the double computer concept and electronic pedal position sensor with three-channel sensor signal transmission.

CAN data bus (Controller Area Network)

This extremely fast, high-performance data bus interconnects all the electronic control units within the drive management system and gives all units additional functions thanks to the enhanced exchange of information. Another advantage is the considerable increase in redundancy, sensor information being available in all control units and lacking information therefore being generated, when required, from other signals.

These numerous measures and features provide a number of positive effects:

Fuel economy:

By increasing the compression ratio, reducing frictional losses, reducing engine speed when idling, and increasing engine coolant temperature to 95° C, fuel economy is improved considerably. Indeed, fuel consumption when idling with a drive gear engaged is down by no less than 33 per cent.

Exhaust emissions:

Air gap-insulated exhaust pipes, secondary air injection and the new trimetallic catalytic converter coating reduce emissions by more than 60 per cent, thus enabling the 12-cylinder to outperform the world's strictest emission standards from the start.

Performance:

Even though BMW's engineers have not sought to achieve supreme output per litre, the increase in engine size alone ensures magnificent performance on the road. Accelerating from a standstill, for example, the new 750i is one length ahead of its predecessor after just 4 seconds and attains a speed of 100 km/h within 6.6 seconds compared to 7.4 seconds for its predecessor.

Idle quality:

In determining the engine's timing and control functions, BMW's specialists gave top priority to achieving supreme idle quality. The result of their efforts is virtually vibration-free idling.

Transmissions

The transmission of the car is crucial to solving the conflict of interests between performance, on the one hand, and fuel economy, on the other.

Other objectives:

- Excellent gearshift features and motoring comfort
- Absolute reliability regardless of thermal and mechanical loads
- Longer, load-related service intervals as well as comprehensive safety and diagnostic features
- Compact dimensions and low weight

- Automatic shift program selection provided by Adaptive Transmission Management (ATM)
- Availability of an optional sports program
- Maximum noise control
- Use of asbestos-free materials and a high standard of recyclability.

Manual gearboxes

Clutch/two mass flywheel

All manual gearbox versions of the new 7 Series come with an asbestos-free single plate dry clutch and, to ensure optimum vibration comfort, a two-mass flywheel. This sophisticated component very efficiently suppresses gearbox noise when idling, traction noise at low engine speeds, and humming resonance.

Five-speed manual gearbox

The 730i/L comes with the five-speed manual gearbox already featured on the former model - a gearbox with fuel-efficient direct transmission in 5th gear and, like all BMW transmissions, smooth and precise gearshift operation ensured in particular by the use of automatic transmission fluid and double-bevel synchromesh in first and second gear. Further highlights are very efficient noise control provided inter alia by the two-mass flywheel and the specific gear geometry with fine machining of the gears.

The new six-speed manual gearbox

For the first time the 740i is available with BMW's new six-speed manual gearbox with direct transmission in 5th gear and overdrive or economy transmission in 6th gear. The car reaches its top speed in 5th gear, 6th gear reducing engine speed by 17 per cent for optimum fuel economy and motoring comfort. To reduce gearshift forces this gearbox comes with triple-bevel synchromesh in first and second gear and a double-bevel synchromesh in third and fourth gear. Over and above these features, this gearbox also has special anti-friction bearings to minimise noise, hollow shafts to provide a further reduction in weight, and the advantage of even longer oil change intervals.

Automatic transmissions

The 8- and 12-cylinder models are available optionally with 5-speed automatic transmission featuring electronic/hydraulic transmission control. The driver can choose between an adaptive and a sporty driving program.

In each case the car reaches its top speed in fourth gear, 5th gear serving as an overdrive. A converter lock-up clutch activated in the 4th and 5th gear ensures superior fuel economy, adaptive pressure control providing a consistently high standard of excellent gearshift comfort throughout the transmission's entire service life. The transmission management units, in turn, feature comprehensive fail-safe and diagnostic functions. And to enhance gearshift comfort, the transmission control unit communicates via the CAN bus with the engine management system.

The transmission for the 740i and 750i also features a fully managed converter lock-up clutch to reduce fuel consumption without impairing motoring comfort, as well as a lifetime oil filling to reduce the cost of maintenance.

Adaptive Transmission Management (ATM)

To adjust the gear selected by the automatic transmission even more precisely to the driver's specific behaviour and ambient conditions, BMW has in recent years introduced Adaptive Transmission Management (ATM) for the 750i, 850Ci, 530i, and 540i, this system now being further improved for the new 7 Series.

In selecting gears, Adaptive Transmission Management considers not only specific ambient conditions such as uphill and downhill gradients on mountains, towing a trailer, slippery roads or stop-and-go traffic, but also the driver's specific style of motoring.

To do this, ATM analyses the position and movement of the accelerator pedal, the car's current road speed, operation of the kick-down switch, lateral acceleration and retardation when applying the brakes. Then, applying this information, it "assesses" the driver and "chooses" one of four basic programs most suitable for the driver and his specific style of motoring. These programs range from the particularly economical "XE" program through the well-known "E" and "S" programs all the way to the extremely dynamic "XS" program.

Special programs are applied under particular ambient conditions, a winter gearshift program being used on slippery roads, for example, to improve traction and driving stability. When driving on gradients or under unusual loads, the system switches to performance-oriented programs serving to reduce shift frequency. Then, considering the optimum program selected in this way, the control "brain" chooses the best gear ratio, the usual interconnection of gearshift curves and the gear selected being replaced by the Adaptive Transmission Management's own shift function.

Whenever the car is re-started from a standstill this assessment of the specific type of driver at the wheel is repeated, meaning that the control system intentionally "forgets" the previous assessment.

The particular advantages of ATM are the reduction of fuel consumption when driving in a smooth, relaxed style, the reduction of gearshift frequency, optimisation of driving safety on slippery roads, improvement of control ease and minimisation of any intervention by the driver.

The particularly sports-minded driver has the additional option of selecting the sports program permanently via the program selection switch, in which case the individual assessment of the type of driver is not carried out.

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Safety

Developing safe automobiles means far more to BMW's engineers than concentrating on individual features which cover only a specific aspect of vehicle safety. Rather, every BMW comprises all safety requirements within a very comprehensive, all-round concept: Superior active safety to prevent accidents from the start, efficient passive safety for all the car's occupants, far-reaching protection of all road users, and vehicle protection keeping damage in minor accidents to a minimum. The name given to this unique safety concept is F.I.R.S.T. (Fully Integrated Road Safety Technology), and it is precisely here that the new BMW 7 Series establishes a new standard in every respect.

Active safety

The new model series has all the technical features required to handle all driving conditions possibly encountered on the road and to avoid dangerous situations from the outside.

Indeed, enhancing active safety to an even higher standard was one of the highlights in developing the suspension of the new car. And as a result, BMW's engineers were able to overcome the conflict of interests between vehicle comfort and driving characteristics, achieving a degree of excellence never reached before. The "foundation" which makes this possible is the new integral rear axle, the revised double-joint front axle, and the large 16-inch wheels in conjunction with the extremely rigid bodyshell.

Driving characteristics not affected by vehicle load and road speed, excellent handling and precise steering behaviour provide a standard of agility quite unusual in a saloon of this calibre. The complete avoidance of load change responses in bends up to extreme limits, excellent driving characteristics in winter and superior stability when towing a trailer ensure significant safety the driver will really feel even in borderline situations.

The modern, high-performance engines respond simultaneously to the driver's commands. And the transmission with harmonious gear increments - either five- or six-speed manual gearboxes or the five-speed automatic transmission - ensure superior safety reserves, for example for quickly overtaking other vehicles, in all models.

Good all-round visibility guaranteed by the slender roof pillars allows the driver to concentrate in full on the traffic around him. In bad weather the large swept area covered by the two windscreen wipers with pressure control and additional kinematics guidance of the wiper on the front passenger's side provides optimum visibility to the front.

Two large exterior rear-view mirrors with aspheric glass ensure a wide range of visibility to the rear without the slightest blind angle, in this way allowing the driver to efficiently monitor the traffic behind him. And last but not least, the special aerodynamic design of the mirror housing keeps the side windows and mirror surfaces clean and free of dirt.

The dual circular headlights for the high and low beams, a styling feature typical of BMW, are now housed beneath a glass cover. The free-form ellipsoid-reflector light system used on the new 7 Series with either halogen or xenon (optional) bulbs on the low beam ensures consistent

illumination of the road ahead and particularly good illumination to the sides. This efficiently avoids the common "tunnel effect", offering the driver better visibility particularly in bends and on winding roads. A further advantage of this technology is that it avoids dazzling the driver and passengers in fog, rainy weather, or snow.

The high beam featuring free-form paraboloid-reflector technology is now directed entirely at the area beyond the low beam, in this way avoiding any overlap, since the low beam is quite sufficient for illuminating the road ahead even with the high beam on. As a result, the extra light provided by the high beam is used entirely to increase headlight range and generate an even wider illumination "print" far ahead of the car, again ensuring better illumination in bends.

Apart from sophisticated technical systems of this calibre, the outstanding active safety offered by the new 7 Series also results from the optimum design of the cockpit in the car. Accordingly, all controls, the seats themselves, as well as the instruments and displays in the new 7 Series follow BMW's exemplary ergonomics concept. This again helps to provide a relaxed and untiring style of motoring, giving the driver all the important information he needs without distracting him from the traffic on the road.

Passive safety

The new 7 Series also excels by achieving new standards in passive safety, i.e. taking measures to reduce the risk of injury affecting the car's occupants or other road users in the event of an accident.

Offering outstanding stability in all kinds of collision, the passenger cell gives all occupants a safe and secure survival area. Indeed, the particular rigidity of the cell is the result of a whole range of carefully co-ordinated design features.

This stability results from the extremely stable floor pan with extra-large side-sills, engine supports with predetermined deformation points highly significant in the event of a collision, as well as additional cross members and transverse supports. Stable single-piece side panels with additional reinforcement on the pillars and side-sills as well as particularly rigid intersections on the A, B, and C pillars help to further strengthen the passenger safety cell. And even these features are enhanced by the particularly strong connection points leading to the front axle subframe, an extremely rigid rear axle subframe, the special roof structure, and the engine compartment lid with predetermined deformation points.

In conjunction with the stable passenger cell, the new, particularly elaborate side-impact protection system offers a significant increase in safety in collisions from the side. The new crossbars in the four doors are arranged diagonally, thus covering a far larger area than any conventional solution. In severe collisions the safety anchors at the ends of the crossbars come to rest firmly in the door frame, making the entire safety system extremely strong and rigid. And being elastic in design, the crossbars move back from this anchor position after a crash, allowing the doors to be easily opened. Further features of this side-impact safety system are the particularly strong door locks and hinges.

The passenger restraint system on the front seats has been improved to an even higher level. Apart from driver and front passenger airbags fitted

as standard and conventional three-anchor seat belts with automatic belt latch tensioners providing even greater safety by reducing any forward motion of the occupants in a collision and preventing them from "diving" beneath their belts ("submarining", as it is called by the experts). This is done by tightening the shoulder and lap belts simultaneously whenever required.

A new feature is that the airbag and belt latch tensioners are activated in two exactly co-ordinated steps, depending on the direction of a collision and its severity. This is made possible by new, highly sophisticated activation sensors with two pre-programmed activation thresholds: In the event of a less severe collision not requiring activation of the airbag, the control unit triggers the belt latch tensioners only, thus ensuring that the seat belts offer optimum restraint. Once a critical threshold is exceeded, however, the airbags are activated in addition.

Another new feature is the seat occupation detector. Pressure sensors on the front passenger seat bottom prevent activation of the passenger airbag if the seat is not occupied.

In all, this new passenger restraint system offers a whole range of advantages:

- Minimum risk of injury in collisions at low speeds, since the belt and belt latch tensioner hold back the occupants with maximum efficiency
- Maximum occupant safety in severe collisions ensured by optimum interaction of all safety systems.
- Long deformation travel provided by the entire front end of the car, in this way reducing the impact energy acting on the occupants.

- Seat belts and belt latch tensioners enabling the passengers to join in the relatively "soft" deceleration process in a collision right from the beginning, thus reducing the forces acting on occupants to a minimum.
- Airbags with the additional effect of reducing head rotation and head acceleration to a minimum.
- Selective activation of the individual safety systems avoiding unnecessary cost of repair.

The rear seats come with BMW's proven ergonomic belt system: With the belt latches at the outside, the passengers can easily buckle up with only one hand. With use of the seat belts thus becoming easier, more passengers tend to buckle up in the first place, all the more so as the seat belts rest on the body very comfortably and provide superior safety through optimum belt geometry. For a third passenger at the rear there is an inertia-reel lap belt in the middle of the rear seats.

Given all these superior safety features, the new 7 Series significantly outperforms all safety standards applied by lawmakers the world over. The passenger cell is designed to provide maximum safety at impact speeds (head-on collision) of both 35 mph (56 km/h) and 30 mph (48 km/h), thus exceeding the current US 30 mph head-on collision requirement by 5 mph. This alone means that the bodyshell is able to absorb more than one-third more energy than required by law.

Partner protection

Compared with the occupants of a car, pedestrians and cyclists have no or only a very limited passive safety system of their own. Automotive

engineers are therefore called upon to provide maximum safety for other partners on the road as well.

This is why both the new 7 Series and indeed all models in the BMW range have a host of features which minimise the risk of injury in a collision. Large, relatively soft bumper covers and smooth surfaces throughout the entire bodyshell help to take the "punch" out of an impact as do the laminated glass windscreen, lights fitted flush with the body, recessed windscreen wipers and door openers, the aerial integrated in the rear window, and rear-view mirrors folding smoothly in either direction. Even the occupants of smaller cars hardly able to offer a high standard of passive safety benefit from BMW's all-round safety concept, the relatively "soft" front end of a BMW being able to provide some deformation required by such a smaller vehicle.

Vehicle protection

The level of vehicle protection built into the new 7 Series, i.e. the prevention of damage to the car itself, naturally complies in full with the high standard already achieved by BMW. Featuring very strong bumpers and impact absorbers, the front and rear impact absorption system takes up collisions up to 4 km/h - that is the typical bumps encountered in parking - without any damage being caused to the car itself. And in collisions at speeds up to 15 km/h energy is absorbed both front and rear by easily replaceable crumple units, thus avoiding damage in many cases to the structure of the car as such.

Another feature of these crumple units and impact absorbers is that they spread out forces throughout all load-bearing elements and supports, predetermined deformation of the longitudinal engine mounts ("chassis legs") allowing low-cost sectional repair.

As a result of this design concept, the new 7 Series qualifies for low insurance premiums reducing the cost of ownership.

A really "hot" subject these days is car theft. Statistics on the cars stolen most often nevertheless show that BMW's fortunately do not rank at the top of this list thanks to their very high standard of anti-theft security.

The new 7 Series features numerous innovations also in the interest of anti-theft security. When closing the doors, for example, the driver and passengers automatically activate the immobiliser fitted as standard as well as the central locking with remote control and an interchangeable code. The keys themselves come in four-web technology particularly difficult to copy. Each of the three locks on the car furthermore incorporates a freewheel locking cylinder, the lock housing being fitted from inside to make sure that the lock cylinders cannot be pulled out. Unauthorised access is also rendered far more difficult by kinematic modifications to the mechanical structure of the locks.

The steering wheel lock is protected by a slip-clutch mechanism making it impossible to break through the locking bolt by forcing round the steering wheel. And last but certainly not least, the customer may also opt for a highly efficient anti-theft warning system (standard from the 750i) providing an even higher level of all-round security.

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Environmental compatibility

As a company dedicated to mobility, BMW feels a sense of responsibility about its products even after they have reached the end of their service life. In terms of vehicle development, this means that BMW focuses not only on the production of automobiles and motorcycles, but also on their entire life-cycle and subsequent recycling, all these factors therefore being considered in every new vehicle concept. The objective in all cases is to take a maximum load off the environment and to preserve resources to the greatest possible extent.

The new 7 Series complies in full with all emission control regulations currently in force world-wide. Offering optimum fuel economy and very low exhaust emissions for a car of its size, the 7 Series is not only a high-performance automobile, but also just the right car for our world today. Engine management and the fuel supply system are very elaborate. Fully sequential, cylinder specific fuel injection, anti-knock control and overrun management as well as grid-controlled, adaptive dual oxygen sensors ensure a low emission level from the outset (apart from providing other benefits). All the way to the catalytic converters, exhaust emissions flow through double-wall, air gap-insulated pipes. And the new catalysts themselves come with trimetallic coating (palladium platinum and rhodium). In conjunction with the heated oxygen sensor, this ensures a high conversion rate even at very low emission temperatures, thus reducing emissions once again even in the warm-up phase.

A further highlight in the development of every BMW is noise control. As a result, the BMW 7 Series already fulfils without exception all the strict dB (A) exterior noise standards not to take effect within the EC until October 1995. BMW's engineers have succeeded not only in achieving this demanding standard throughout the entire model range, but even in substantially outperforming the standard with nearly all engine variants. As an example, all automatic transmission models have a sensationally low exterior noise level of just 70 dB(A).

Even though customers may not think of recycling right away when buying a new car, this aspect of a modern automobile is gaining increasing significance. This is precisely why BMW has been concentrating very

thoroughly on vehicle recycling for many years and may now look back at substantial success in this area.

Developments in recycling involve two factors in particular: First, the disposal of all old BMWs, regardless of the model and year of production; second, recycling as an integral feature in developing new cars.

As far back as 1991, BMW became the world's first carmaker to start taking back all its old cars regardless of the model and year of production. And it almost goes without saying that this take-back warranty also applies to the new 7 Series. With prices being determined individually according to the merits of the car, specially appointed recycling centres take care of waste disposal in accordance with environmental regulations. Even today, taking back old cars free of charge is no problem for BMW, numerous studies having shown that old BMWs fetch prices in the free recycling market at least covering if not exceeding the cost of subsequent recycling and disposal (thanks to the high value of the car's components). Hence, the second-hand parts market provides an economical and ecological materials cycle, parts being re-used directly in an ideal manner.

This recycling network is being further expanded independently of the legal regulations now in force. As a result, BMW plans to have a nation-wide recycling network in Germany in operation by 1995 ("nation-wide" in this context meaning that there will be at least one recycling centre in every county). And at the same time the network is being rapidly expanded throughout Europe. The purpose of this activity is to ensure proper disposal of all materials relevant to the environment and to reduce to a minimum any non-usable shredder residues by the establishment of materials recycling concepts.

In one of the world's first pilot disassembly plants established in 1990 at the Landshut factory, BMW's recycling specialists are now developing new disassembly methods. Vehicles in BMW's current and future model generations are examined here in terms of their future recycling capacity, the know-how gained in this process going directly into new developments and being transferred to BMW's recycling partners.

In the meantime recycling has become an integral feature in the development of every new BMW. Indeed, BMW became the world's first car manufacturer to introduce a recycling standard in early 1992 applicable even in the design phase of a new vehicle. This standard categorises all vehicle components in terms of their environmental compatibility and their capacity for economically and ecologically meaningful recycling.

To reach this aim, all plastic components already come with a definite specification of the materials used - which is why no less than 50 per cent of all plastics (thermoplasts and duroplasts) on the new BMW 7 series may already be reused economically. Currently about 10 per cent (by weight) of the plastics used may be replaced by recycled products, this figure constantly increasing with ongoing development and the growing market for secondary raw materials.

In conjunction with suppliers, BMW's engineers and designers carefully consider from the beginning in the case of large plastic components how they might be recycled at a later point in time.

Apart from the sparing use of resources, another factor given particular attention at the moment is to minimise the environmental burden caused by production. Again, BMW has already worked successfully towards this goal by minimising water and energy consumption and fully supervising the use of materials relevant to the environment, to the extent to which they are still required in production.

Both in production and the products as such, BMW already goes far beyond legal requirements by avoiding the use of harmful and problematic substances such as cadmium, asbestos, CFC, or NiCd batteries.

BMW AG

BMW AG Presse

			SALOON			
	SPECIFICATIONS: BMW CAR RANGE		730i	730iL	740i	740iL
Body Dimensions and weights	No of doors		4	4	4	4
	No of seats		5	5	5	5
	Length/width/height (unladen)	mm	4984/1862/1435	5124/1862/1425	4984/1862/1435	5124/1862/1425
	Wheelbase	mm	2930	3070	2930	3070
	Track, front	mm	1552	1552	1552	1552
	rear	mm	1568	1568	1568	1568
	Turning circle	m	11.6	12.2	11.6	12.2
	Fuel tank capacity/range ¹⁾	l/km	85/785	95/875	85/720	95/800
	Unladen weight	kg	1725 (1755)	1750 (1780)	1790 (1840)	1865
	Max load	kg	535	535	535	535
	Max permissible weight	kg	2260 (2290)	2285 (2315)	2325 (2375)	2400
	Max permissible axle load front/rear	kg	1145/1250	1145/1275	1190/1290	1190/1310
	Max trailer load ²⁾					
	– braked, max gradient 12%	kg	1900 (2000)	1900 (2000)	2100	2100
	– unbraked	kg	750	750	750	750
	Max roof load	kg	100	100	100	100
Max trailer nose weight	kg	75	75	75	75	
Luggage capacity, VDA test	l	500	500	500	500	
Drag coefficient/front area	Cd x A	0.30 x 2.21	0.30 x 2.21	0.30 x 2.21	0.30 x 2.21	
Engine	Layout		V 90	V 90	V 90	V 90
	No of cylinders/valves		8/4	8/4	8/4	8/4
	Mixture preparation		Digital Motor Electronics	Digital Motor Electronics	Digital Motor Electronics	Digital Motor Electronics
	Displacement, effective	cc	2997	2997	3982	3982
	Bore/stroke	mm	84/67.6	84/67.6	89/80	89/80
	Compression ratio/fuel grade	:1	10.5/ROM 91-98 ⁵⁾	10.5/ROM 91-98 ⁵⁾	10/ROM 91-98 ⁵⁾	10.0/ROM 91-98 ⁵⁾
	Max output	kW/bhp	160/218	160/218	210/286	210/286
	– at engine speed	rpm	5800	5800	5800	5800
Max torque	Nm	290	290	400	400	
– at engine speed	rpm	4500	4500	4500	4500	
El.	Battery/location	Ah	92/luggage comp	92/luggage comp	92/luggage comp	92/luggage comp
	Alternator	A/W	100/1400	100/1400	100/1400	100/1400
Chassis/power transmission	Front suspension		Double-pivot struts with castor angle offset; positive steering scrub radius; lateral force compensation; brake dive reduction			
	Rear suspension		Integral axle; multi-dimensional suspension; squat and brake dive compensation Long-wheelbase version: level control system			
	Brakes, front		4-piston fixed caliper brake vented		Single-piston floating caliper disc brakes vented	
	rear		Single-piston floating caliper disc brakes not vented			
	Steering/overall ratio		Ball and nut, with power assistance dependent on torque 16.9 : 1			
Chassis/power transmission	Final drive ratio		3.23 (3.23)	3.23 (3.23)	3.15 (3.15)	(3.15)
	Gear ratios					
	I	:1	4.20 (3.67)	4.20 (3.67)	4.23 (3.55)	(3.55)
	II	:1	2.49 (2.00)	2.49 (2.00)	2.51 (2.24)	(2.24)
	III	:1	1.66 (1.41)	1.66 (1.41)	1.67 (1.55)	(1.55)
	IV	:1	1.24 (1.00)	1.24 (1.00)	1.23 (1.00)	(1.00)
	V	:1	1.00 (0.74)	1.00 (0.74)	1.00 (0.79)	(0.79)
	VI	:1	–	–	0.83 (–)	(0.83)
Reverse	:1	3.89 (4.10)	3.89 (4.10)	3.75 (3.68)	(3.68)	
Tyres		215/65 R 16 98 W	215/65 R 16 98 W	215/65 R 16 98 W	215/65 R 16 98 W	
Wheels		7.5 J x 16/aluminium	7.5 J x 16/aluminium	7.5 J x 16/aluminium	7.5 J x 16/aluminium	
Performance	Power-weight ratio	kg/kW	10.8 (11.0)	10.9 (11.1)	8.5 (8.8)	(8.9)
	Torque-weight ratio	kg/Nm	5.9 (6.1)	6.0 (6.1)	4.5 (4.6)	(4.7)
	Output per litre	kW/l	53.4 (53.4)	53.4 (53.4)	52.7 (52.7)	(52.7)
	Torque per litre	Nm/l	96.8 (96.8)	96.8 (96.8)	100.5 (100.5)	(100.5)
	Acceleration, 0-100 km/h	sec	8.3 (9.7)	8.3 (9.7)	6.9 (7.4)	(7.4)
	0-1000 m	sec	29.2 (30.3)	29.2 (30.3)	26.9 (27.6)	(27.6)
80-120 km/h 4 th gear	sec	9.9 (–)	9.9 (–)	7.4 (–)		
80-120 km/h 5 th gear	sec		14.3 (–)			
Top speed	km/h	235 (234)	235 (234)	250 (250) ⁴⁾	(250) ⁴⁾	
Fuel consumption	5-/6-speed gearbox					
	– at steady 90 km/h	l/100 km	8.0 (7.4)	8.0 (7.4)	8.5 (8.3)	(8.3)
	– at steady 120 km/h		9.6 (8.9)	9.6 (8.9)	9.9 (9.8)	(9.8)
	– urban cycle		14.9 (15.1)	14.9 (15.1)	17.1 (16.3)	(16.3)
– average		10.8 (10.5)	10.8 (10.5)	11.8 (11.5)	(11.5)	

() Figures in brackets: with automatic transmission

1) With standard gearbox, related to average ECE test consumption

2) May be increased under certain conditions

3) Permissible roof load with hardtop: 30 kg

4) Cut off electronically

5) All specifications regarding driving performance and fuel consumption are based on RON 95

(Not all footnotes are used on each data sheet)

(The copy and specifications apply to vehicles for the German market.)

Deviations from the model variants described here are possible in various countries.)

		SALOON			
	SPECIFICATIONS: BMW CAR RANGE	730i	730iL	740i	740iL
Filling capacities	Radiator system including heater Engine oil Transmission fluid Final drive fluid	12.0 8.5 1.2 (ca. 3.0) 1.4	12.0 8.5 1.2 (ca. 3.0) 1.4	12.0 8.5 1.75 (-) 1.6	12.0 8.5 permanent lubrication 1.6
BMW AG					

		SALOON			
SPECIFICATIONS: BMW CAR RANGE		750i	750iL		
Body Dimensions and weights	No of doors	4	4		
	No of seats	5	5		
	Length/width/height (unladen)	mm	4984/1862/1425	5124/1862/1425	
	Wheelbase	mm	2930	3070	
	Track, front	mm	1552	1552	
	Track, rear	mm	1568	1568	
	Turning circle	m	12.2	12.2	
	Fuel tank capacity/range ¹⁾	l/km	95/800	95/800	
	Unladen weight	kg	1960	1995	
	Max load	kg	535	535	
	Max permissible weight	kg	2495	2530	
	Max permissible axle load front/rear	kg	1210/1345	1220/1365	
	Max trailer load ²⁾				
	– braked, max gradient 12%	kg	2100	2100	
	– unbraked	kg	750	750	
Engine	Max roof load	kg	100	100	
	Max trailer nose weight	kg	75	75	
	Luggage capacity, VDA test	l	500	500	
	Drag coefficient/front area	Cd x A	0.32 x 2.21	0.32 x 2.21	
	Layout		V 60	V 60	
	No of cylinders/valves		12/2	12/2	
	Mixture preparation		Digital Motor Electronics	Digital Motor Electronics	
	Displacement, effective	cc	5379	5379	
El.	Bore/stroke	mm	85/79	79/85	
	Compression ratio/fuel grade	:1	10/ROM 91-98 ⁵⁾	10/ROM 91-98 ⁵⁾	
	Max output	kW/bhp	240/326	240/326	
	– at engine speed	rpm	5000	5000	
	Max torque	Nm	490	490	
	– at engine speed	rpm	3900	3900	
Chassis/power transmission	Battery/location	Ah	92/luggage comp	92/luggage comp	
	Alternator	A/W	140/1960	140/1960	
	Front suspension		Double-pivot struts with castor angle offset; positive steering scrub radius; lateral force compensation; brake dive reduction		
	Rear suspension		Integral axle; multi-dimensional suspension; squat and brake dive compensation level control system; adaptive suspension with automatic electronic damper force adjustment (EDC III)		
	Brakes, front		Double-piston floating caliper disc brakes vented		
	rear		Single-piston floating caliper disc brakes, drum type parking brake integrated vented		
	Steering/overall ratio		Ball and nut, with power assistance dependent on torque; Servotronic 16.9 : 1		
	Final drive ratio		2.89	2.81	
	Gear ratios				
	I	:1	3.55	3.55	
	II	:1	2.24	2.24	
	III	:1	1.55	1.55	
Performance	IV	:1	1.00	1.00	
	V	:1	0.79	0.79	
	VI	:1	–	–	
	Reverse	:1	3.68	3.68	
	Tyres		235/60 R 16 100 W	235/60 R 16 100 W	
	Wheels		7.5 J x 16/aluminium	7.5 J x 16/aluminium	
	Power-weight ratio	kg/kW	8.2	8.3	
	Torque-weight ratio	kg/Nm	4.0	4.1	
Fuel consumption	Output per litre	kW/l	44.6	44.6	
	Torque per litre	Nm/l	91.1	91.1	
	Acceleration, 0-100 km/h	sec	6.6	6.6	
	0-1000 m	sec	26.6	26.6	
	80-120 km/h 4 th gear	sec	–	–	
Fuel consumption	80-120 km/h 5 th gear	sec	–	–	
	Top speed	km/h	250	250	
	5-speed gearbox				
	– at steady 90 km/h	ltr/100 km	8.6	8.6	
	– at steady 120 km/h		10.3	10.3	
Fuel consumption	– urban cycle		16.8	16.8	
	– average		11.9	11.9	

() Figures in brackets: with automatic transmission

1) With standard gearbox, related to average ECE test consumption

2) May be increased under certain conditions

3) Permissible roof load with hardtop: 30 kg

4) Cut off electronically

5) All specifications regarding driving performance and fuel consumption are based on RON 95

(Not all footnotes are used on each data sheet)

(The copy and specifications apply to vehicles for the German market.)

Deviations from the model variants described here are possible in various countries.)

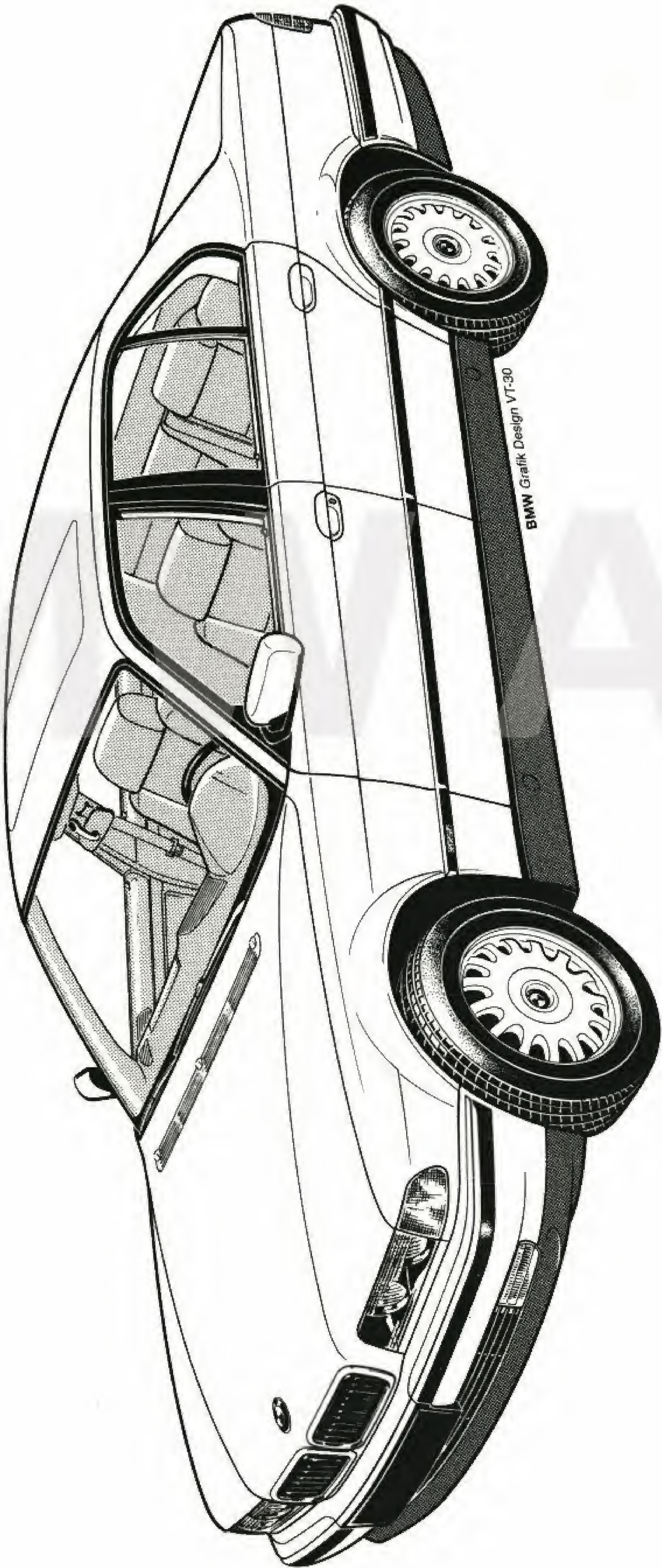
		SALOON			
	SPECIFICATIONS: BMW CAR RANGE	750i	750iL		
Filling capacities	Radiator system including heater Engine oil Transmission fluid Final drive fluid	12.0 9.0 permanent lubrication 1.6	12.0 9.0 permanent lubrication 1.6		

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BMW 7er-Reihe (Mj. '94)
Schrägansicht, Seiten-/Frontansicht

A 94/68



BMW 7er-Reihe (Mj. '94)
Schrägansicht, Seiten-/Frontansicht

BMW 7 Series (1994 model year)
Oblique view, side/front view

BMW - série 7 (année autom. '94)
Vue de biais, vue de profil/de face

BMW Serie 7 (anno modello '94)
Vista laterale, vista frontale

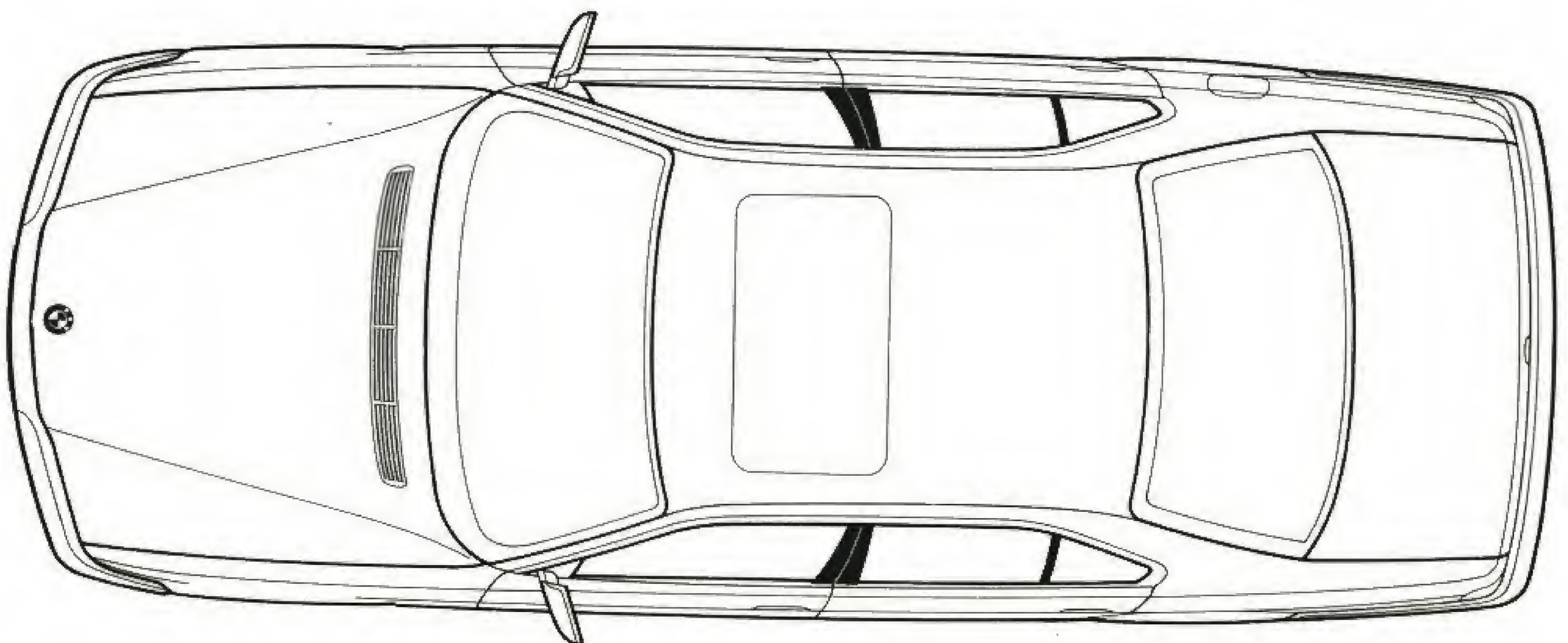
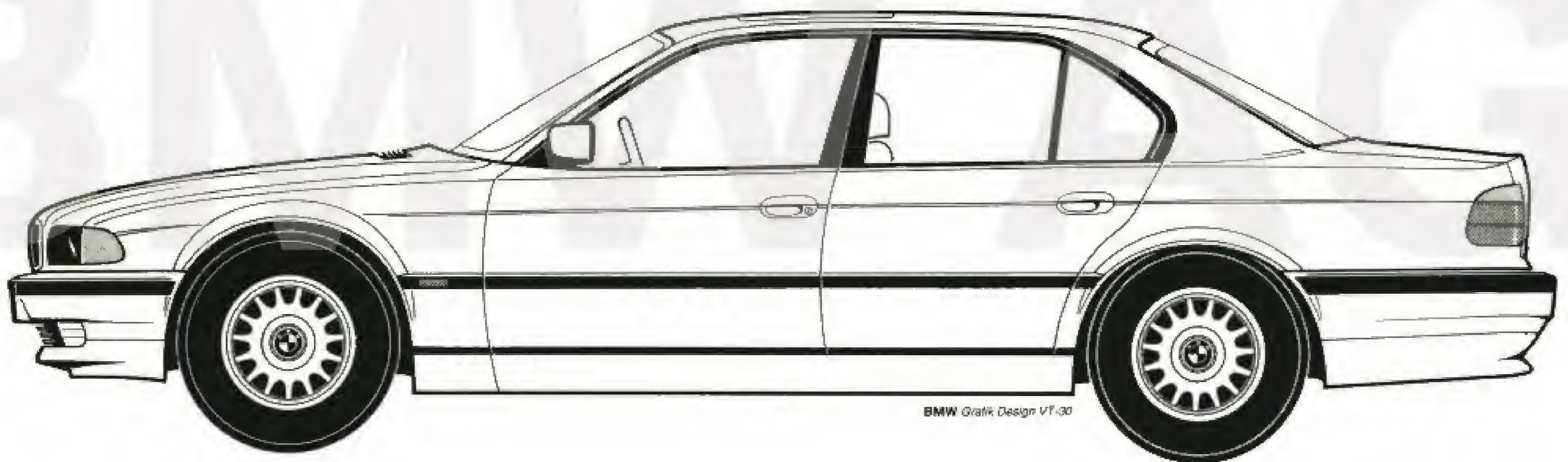
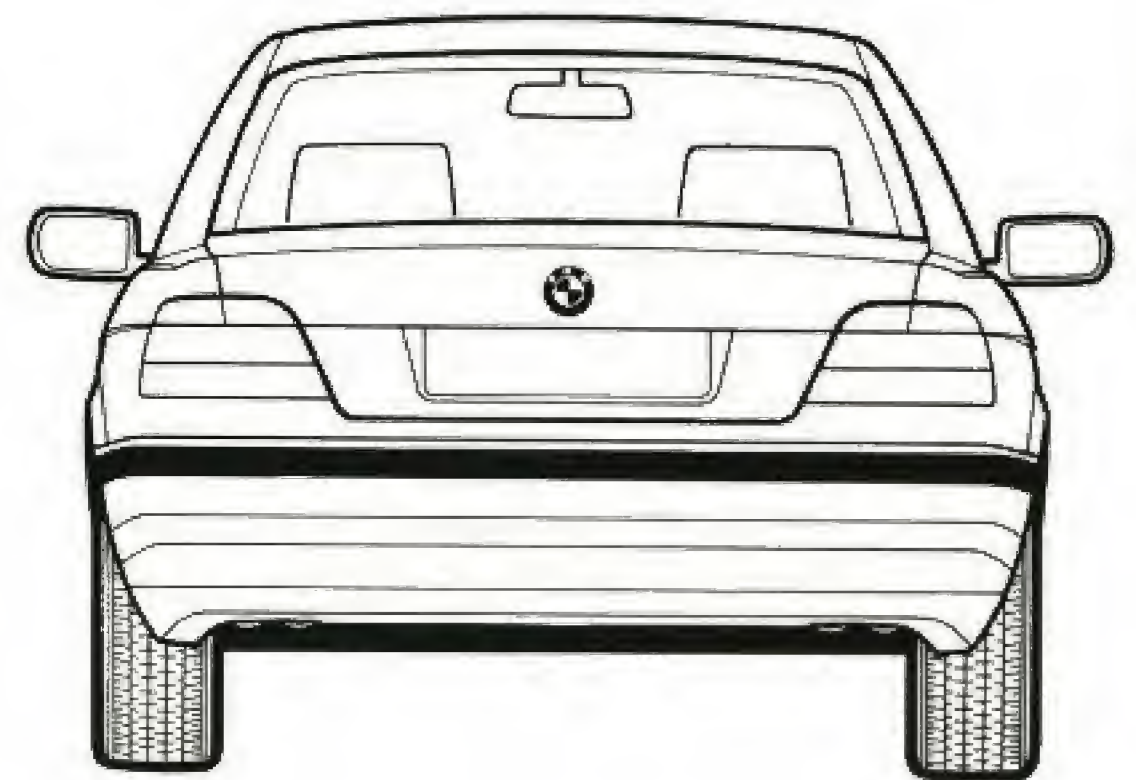
BMW Serie 7 (modelo año '94)
Vista ladeada, costado y frontal

BMW AG

BMW 7er-Reihe (Mj. '94)

Vier Ansichten

A 94/66



BMW 7er-Reihe(Mj. '94)

Vier Ansichten

BMW 7 Series (1994 model year)

Four views

BMW - série 7 (année autom. '94)

Quatre vues

BMW Serie 7 (anno modello '94)

Quattro viste

BMW Serie 7 (modelo año '94)

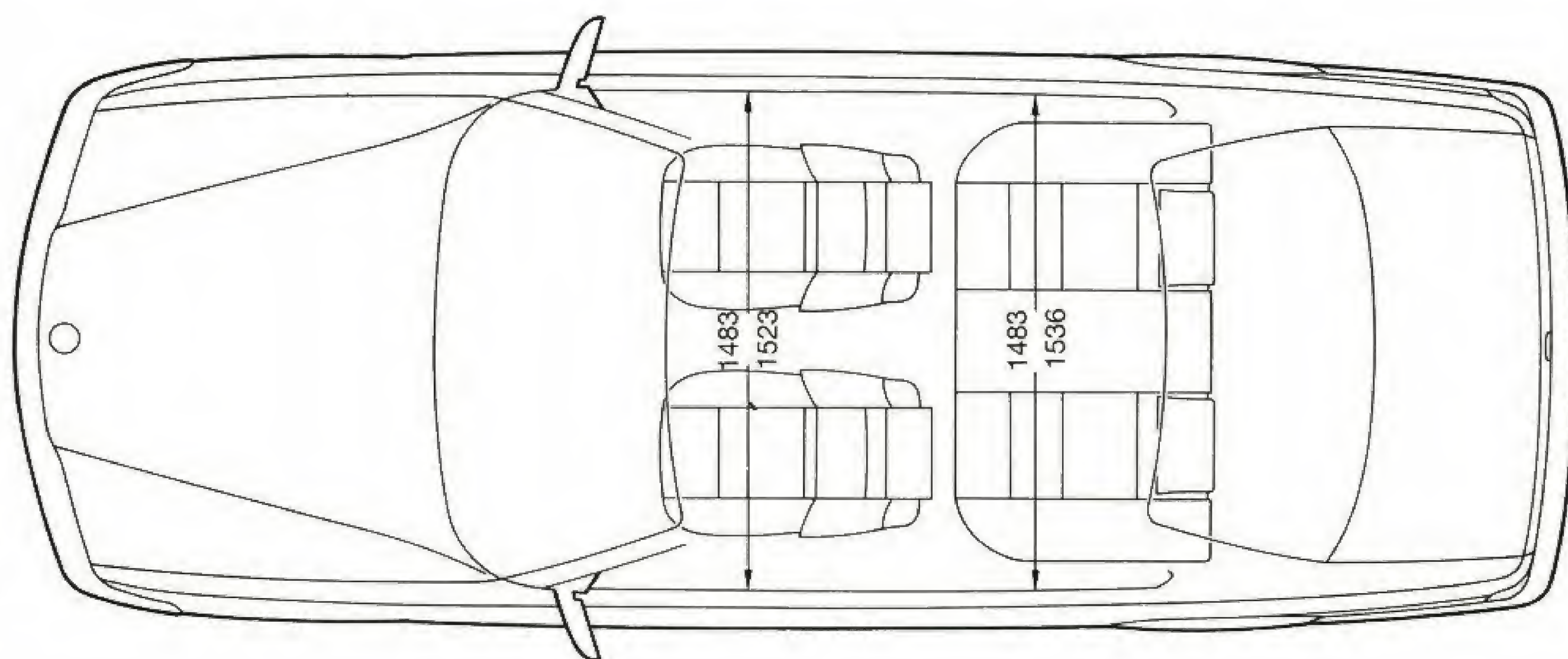
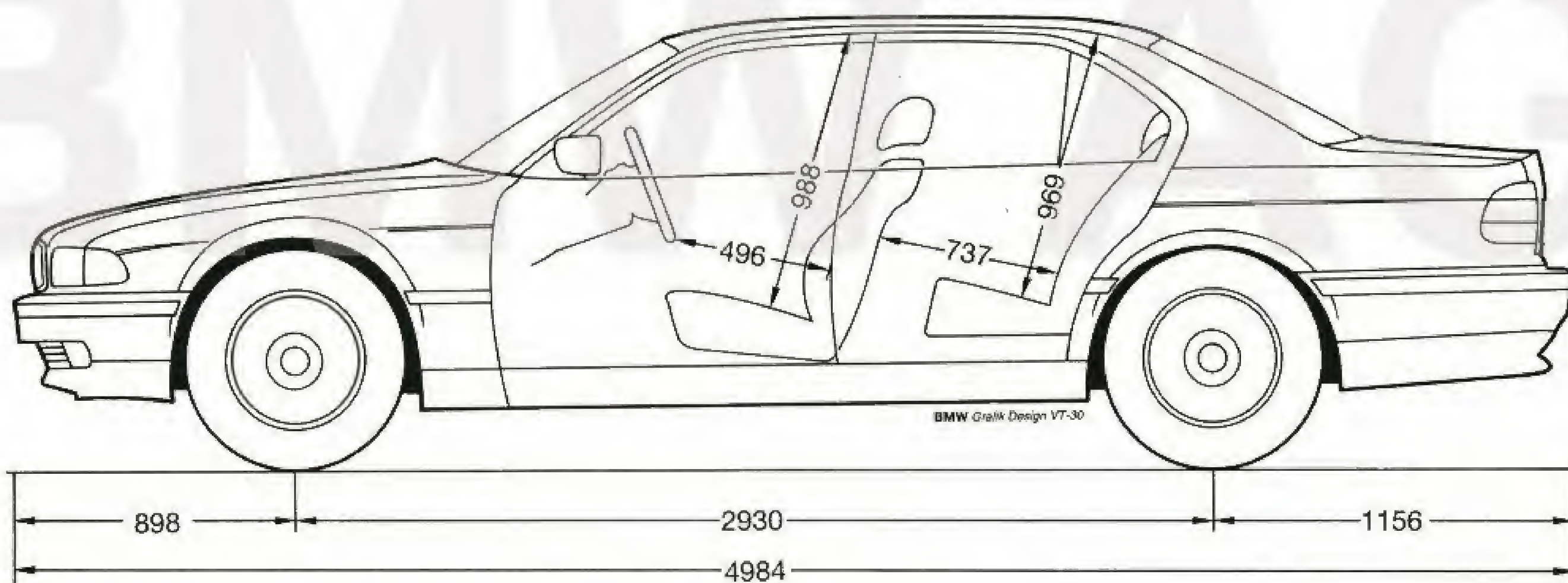
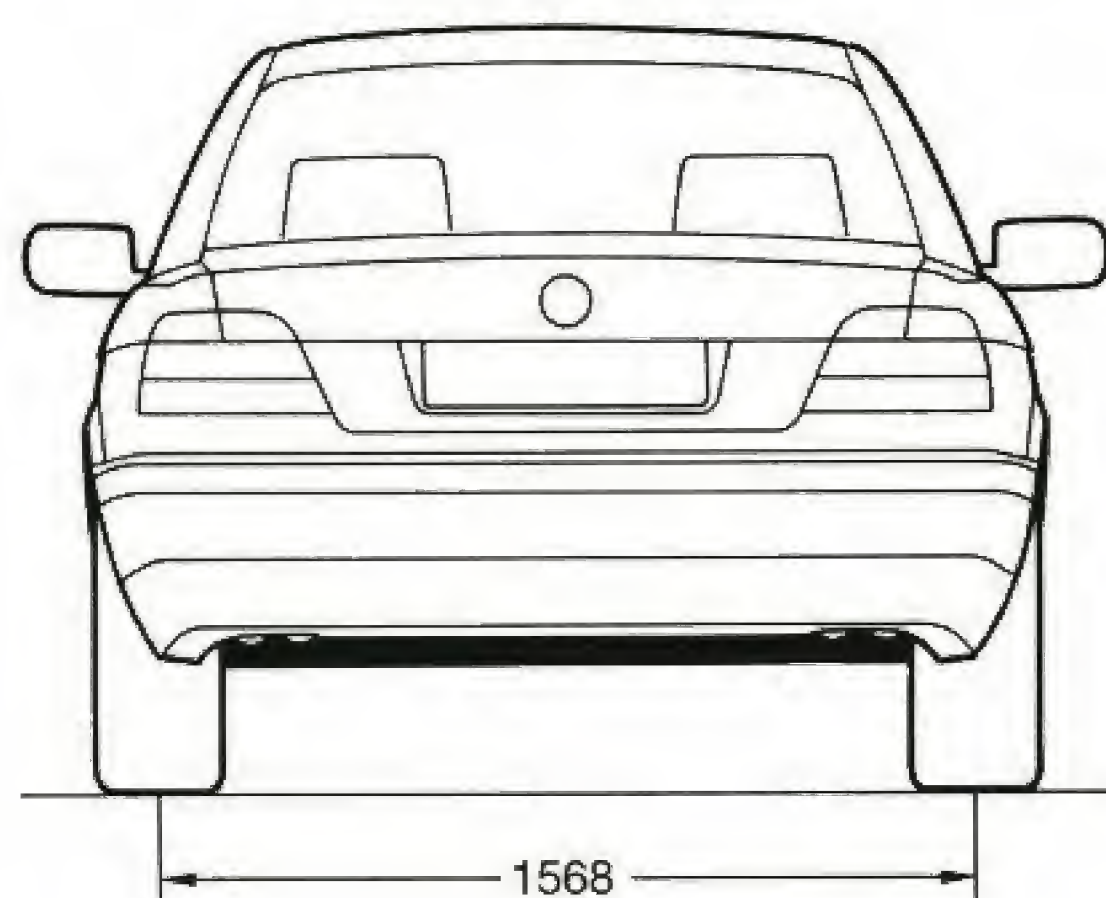
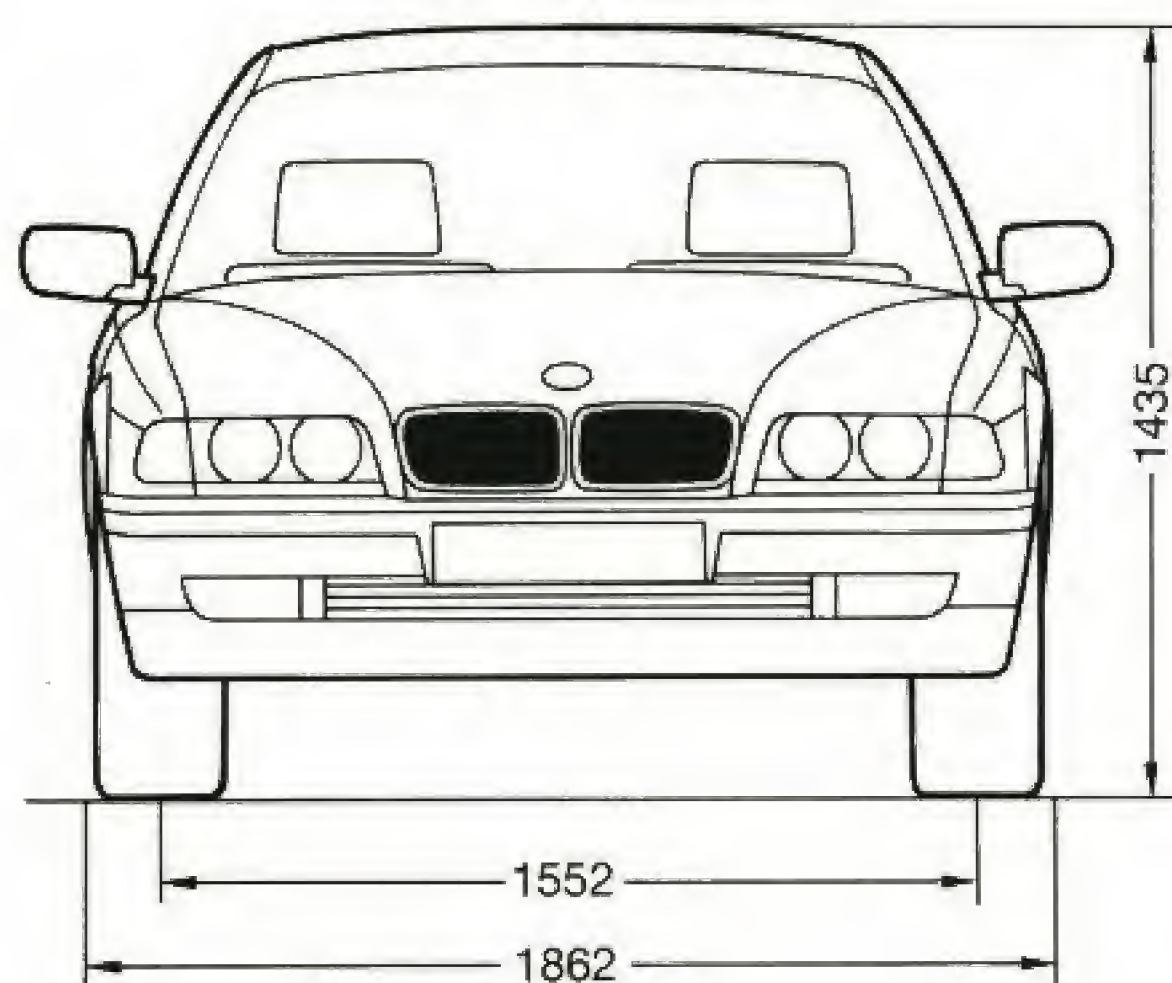
Cuatro vistas

BMW AG

BMW 7er-Reihe (Mj. '94)

Innen- und Außenmaße

A 94/05



BMW 7er-Reihe (Mj. '94)
Innen- und Außenmaße

BMW 7 Series (1994 model year)
Interior and exterior dimensions

BMW - série 7 (année autom. '94)
Cotes intérieures et extérieures

BMW Serie 7 (anno modello '94)
Dimensioni interne ed esterne

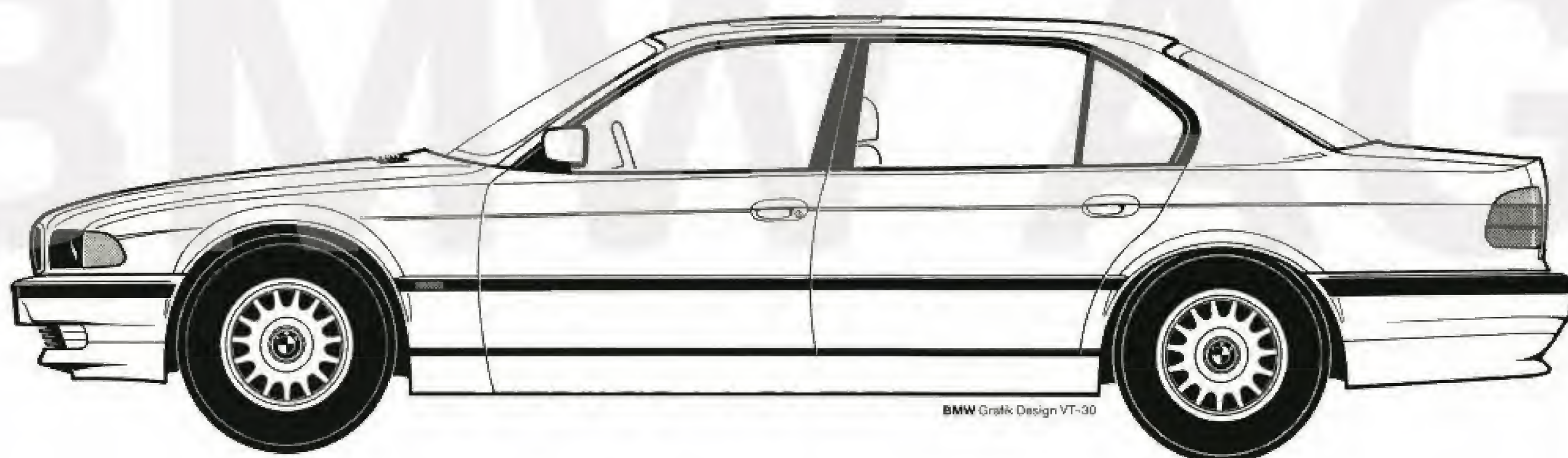
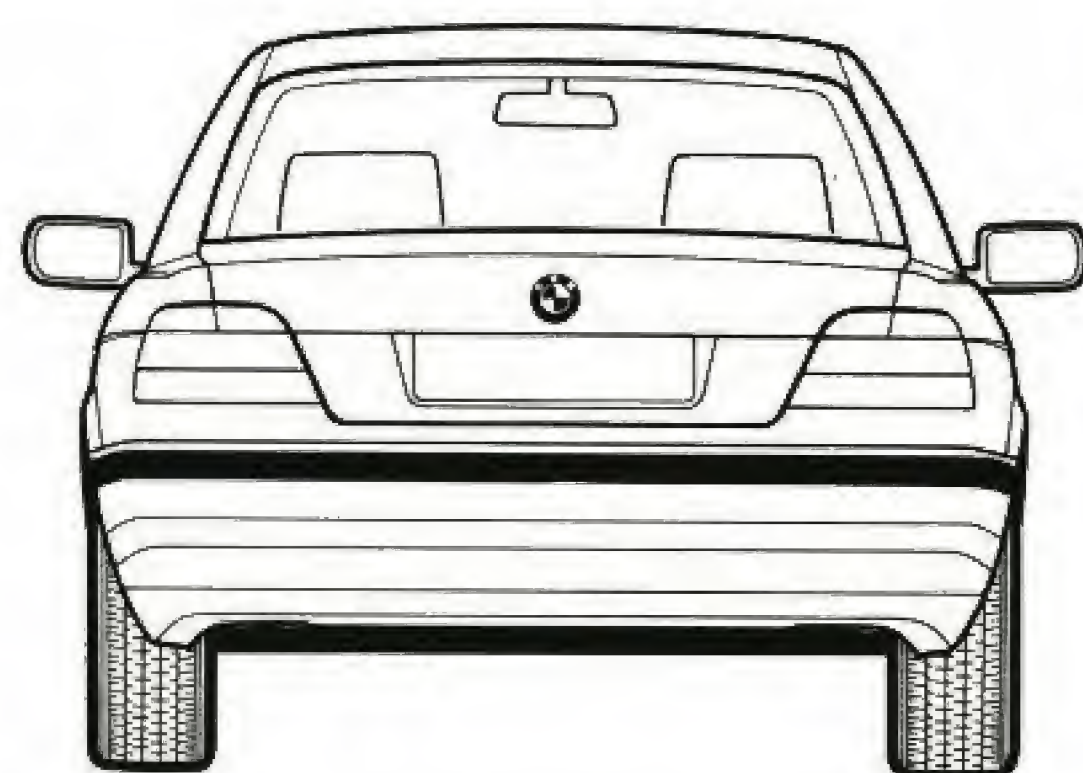
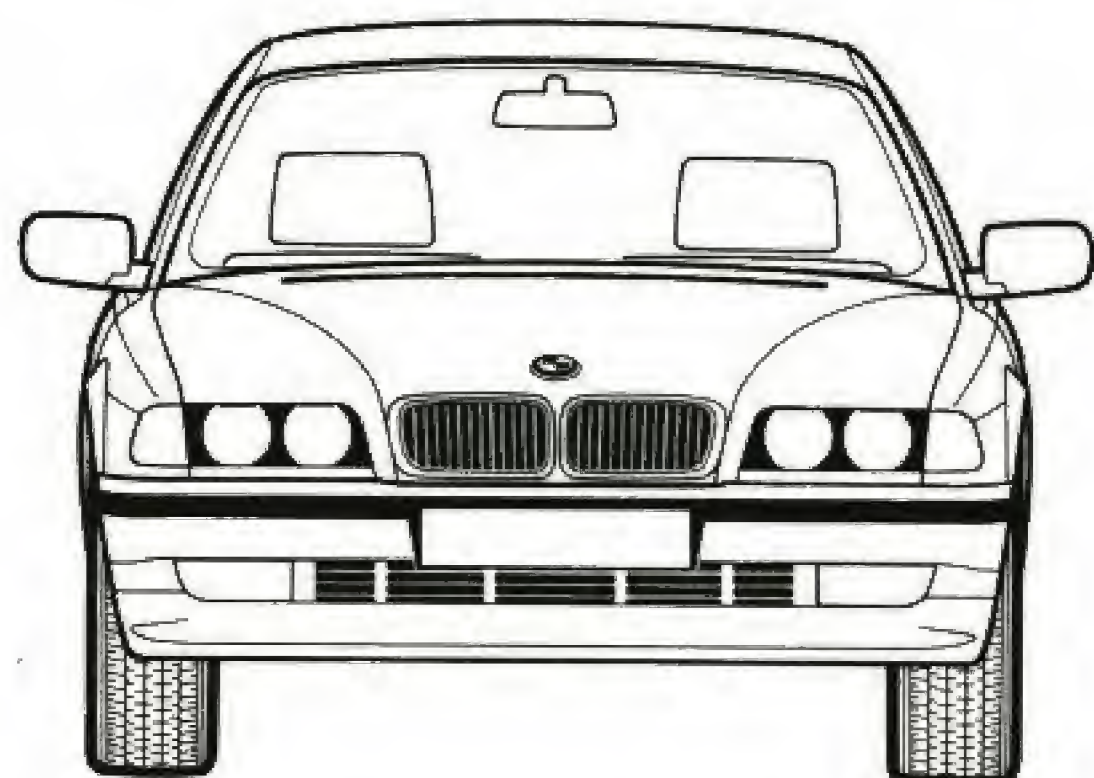
BMW Serie 7 (modelo año '94)
Cotas interiores y exteriores

BMW AG

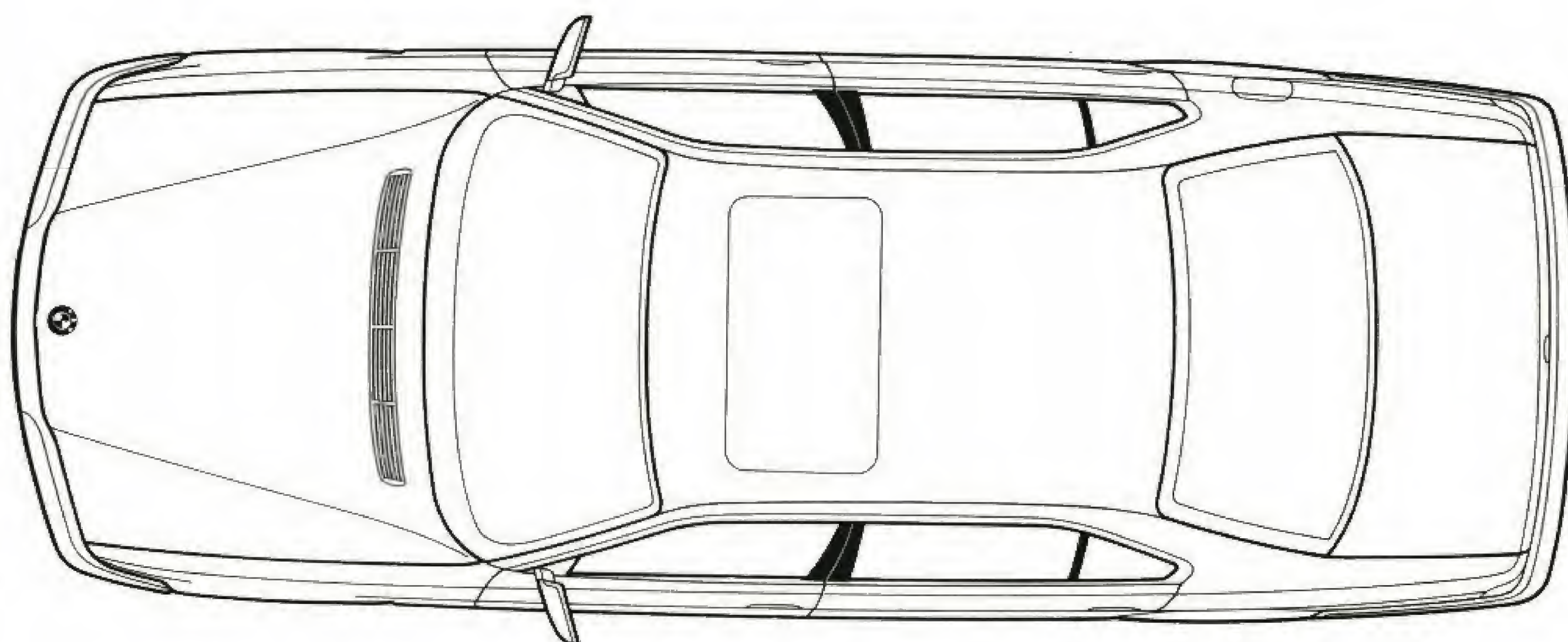
BMW 7er-Reihe / Langversion (Mj. '94)

Vier Ansichten

A 94/67



BMW Grafik Design VT-30



BMW 7er-Reihe / Langversion (Mj. '94)

Vier Ansichten

BMW 7 Series / long-wheelbase version (1994 model year)

Four views

BMW - série 7 / version longue (année autom. '94)

Quatre vues

BMW Serie 7 / versione lunga (anno modello '94)

Quattro viste

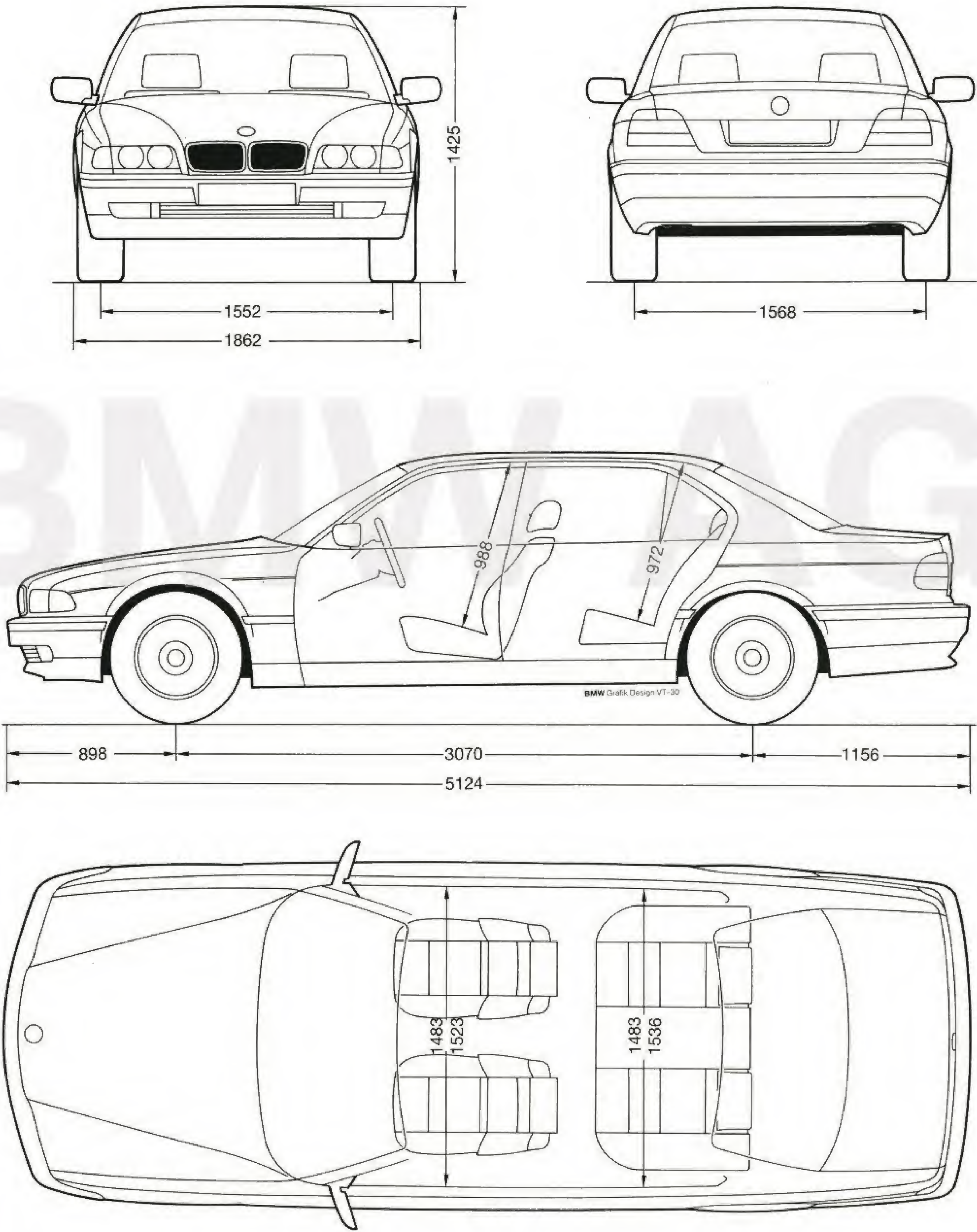
BMW Serie 7 / versión larga (modelo año '94)

Cuatro vistas

BMW AG

BMW 7er-Reihe / Langversion (Mj. '94)
Innen- und Außenmaße

A 94/06



BMW 7er-Reihe / Langversion (Mj. '94)
Innen- und Außenmaße

BMW 7 Series / long-wheelbase version (1994 model year)
Interior and exterior dimensions

BMW - série 7 / version longue (année autom. '94)
Cotes intérieures et extérieures

BMW Serie 7 / versione lunga (anno modello '94)
Dimensioni interne ed esterne

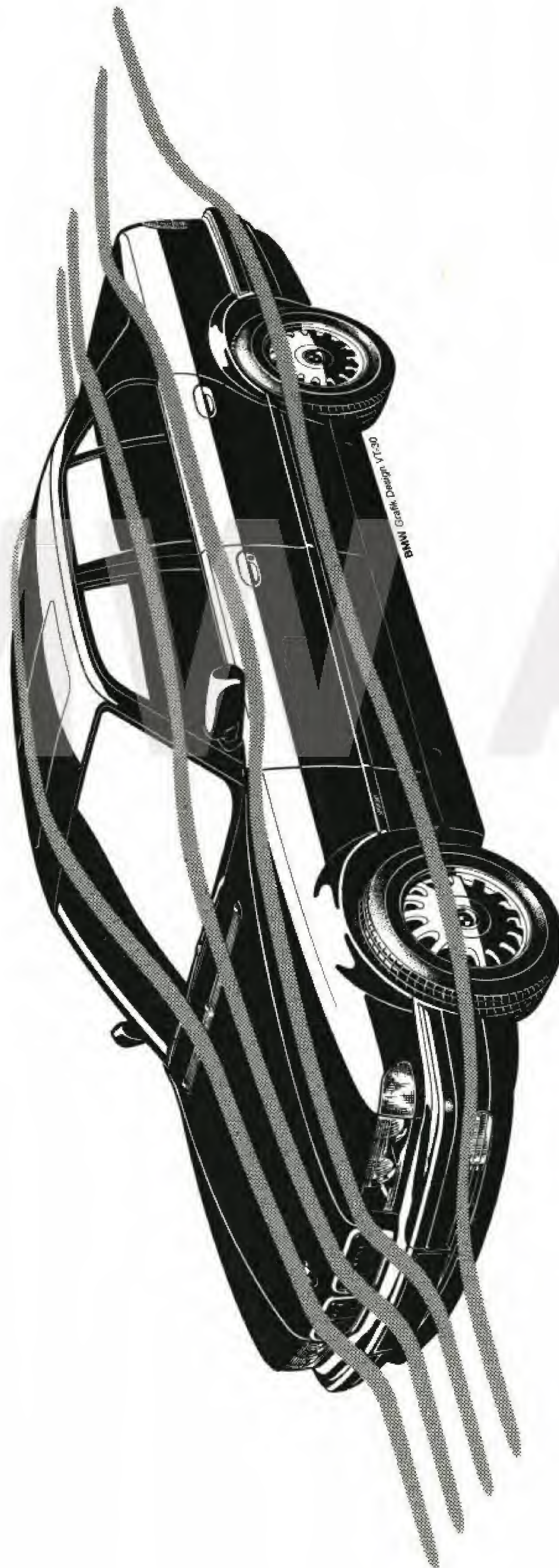
BMW Serie 7 / versión larga (modelo año '94)
Cotas interiores y exteriores

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BMW 7er-Reihe (Mj. '94)

Aerodynamische Umströmung

A 94/69



BMW 7er-Reihe (Mj. '94)
Aerodynamische Umströmung

BMW 7 Series (1994 model year)
Aerodynamic flow

BMW - série 7 (année autom. '94)
Ecoulement aérodynamique autour de la voiture

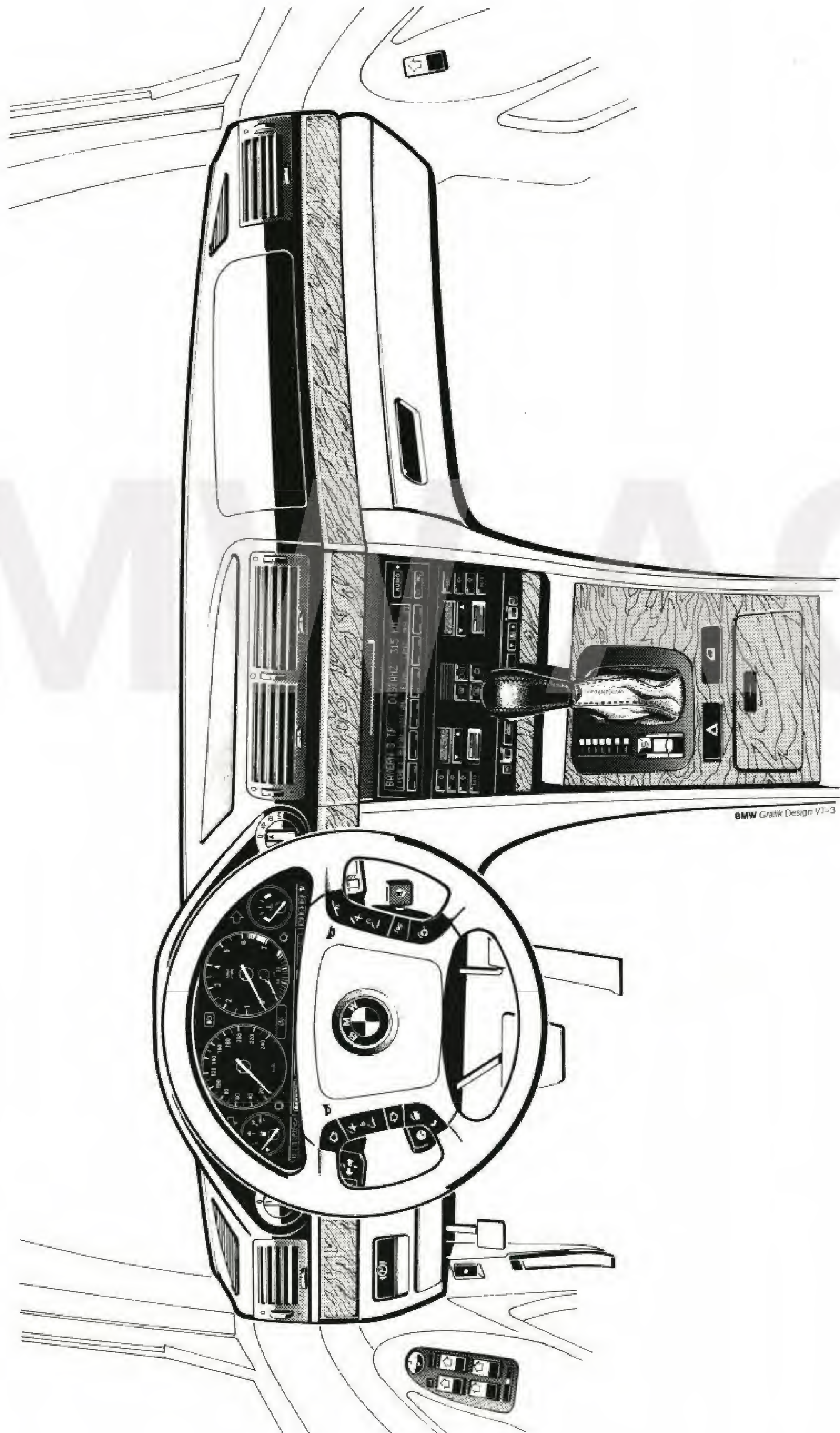
BMW Serie 7 (anno modello '94)
Flusso aerodinamico

BMW Serie 7 (modelo año '94)
Penetración aerodnámica

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BMW 7er Reihe (Mj. '94) Cockpit

A 94/70



BMW 7er Reihe (Mj. '94)

Cockpit

BMW 7 Series ('94 model year)

Cockpit

BMW série 7 (année auto '94)

Poste de pilotage

BMW Serie 7 (anno modello '94)

Cockpit

BMW Serie 7(modelo año '94)

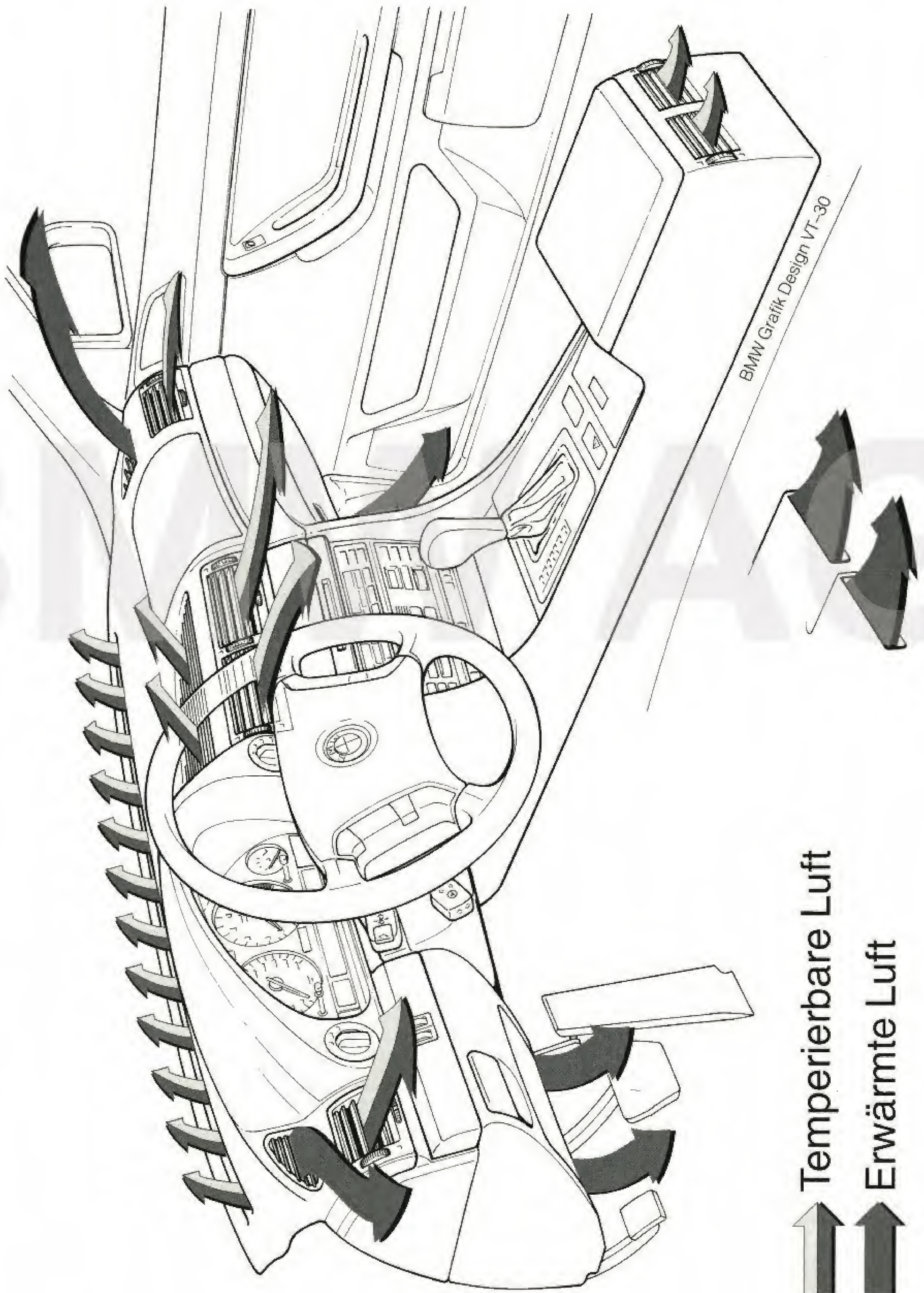
Puesto de conducción

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BMW 7er-Reihe (Mj. '94)

Heizung/Belüftung

A 94/74



BMW 7er-Reihe (Mj. '94)
Heizung/Belüftung

BMW 7 Series (1994 model year)
Heating and ventilation

BMW - série 7 (année autom. '94)
Chauffage et ventilation

BMW Serie 7 (anno modello '94)
Riscaldamento/Ventilazione

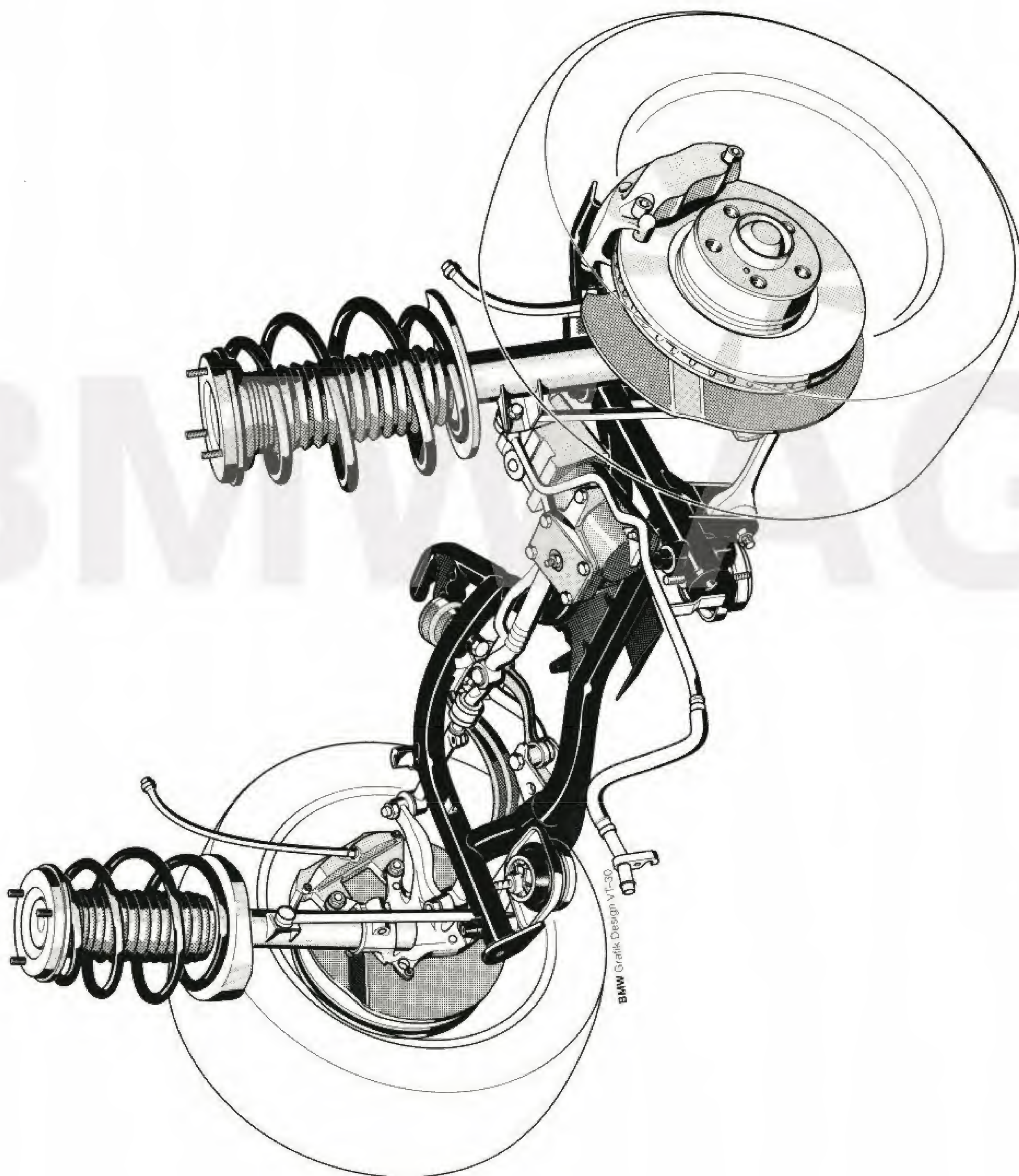
BMW Serie 7 (modelo año '94)
Calefacción y ventilación

BMW AG

BMW 7er-Reihe (Mj. '94)

Vorderachse

A 94/71



BMW 7er-Reihe(Mj. '94)

Vorderachse

Doppelgelenk-Federbeinvorderachse mit Vorlaufversatz
Querkraftausgleich, Bremsnickreduzierung

BMW 7 Series (1994 model year)

Front axle

Double-pivot spring strut front axle with negative caster angle
offset, lateral force compensation, brake dive reduction

BMW - série 7 (année autom. '94)

Train AV

Train AV à jambes de suspension à articulation double avec
déport de chasse négatif, compensation des forces latérales,
effet antiplongée

BMW Serie 7 (anno modello '94)

Asse anteriore

Montante a doppio snodo con variazione dell'incidenza,
compensazione delle forze trasversali, antibeccheggio
in frenata

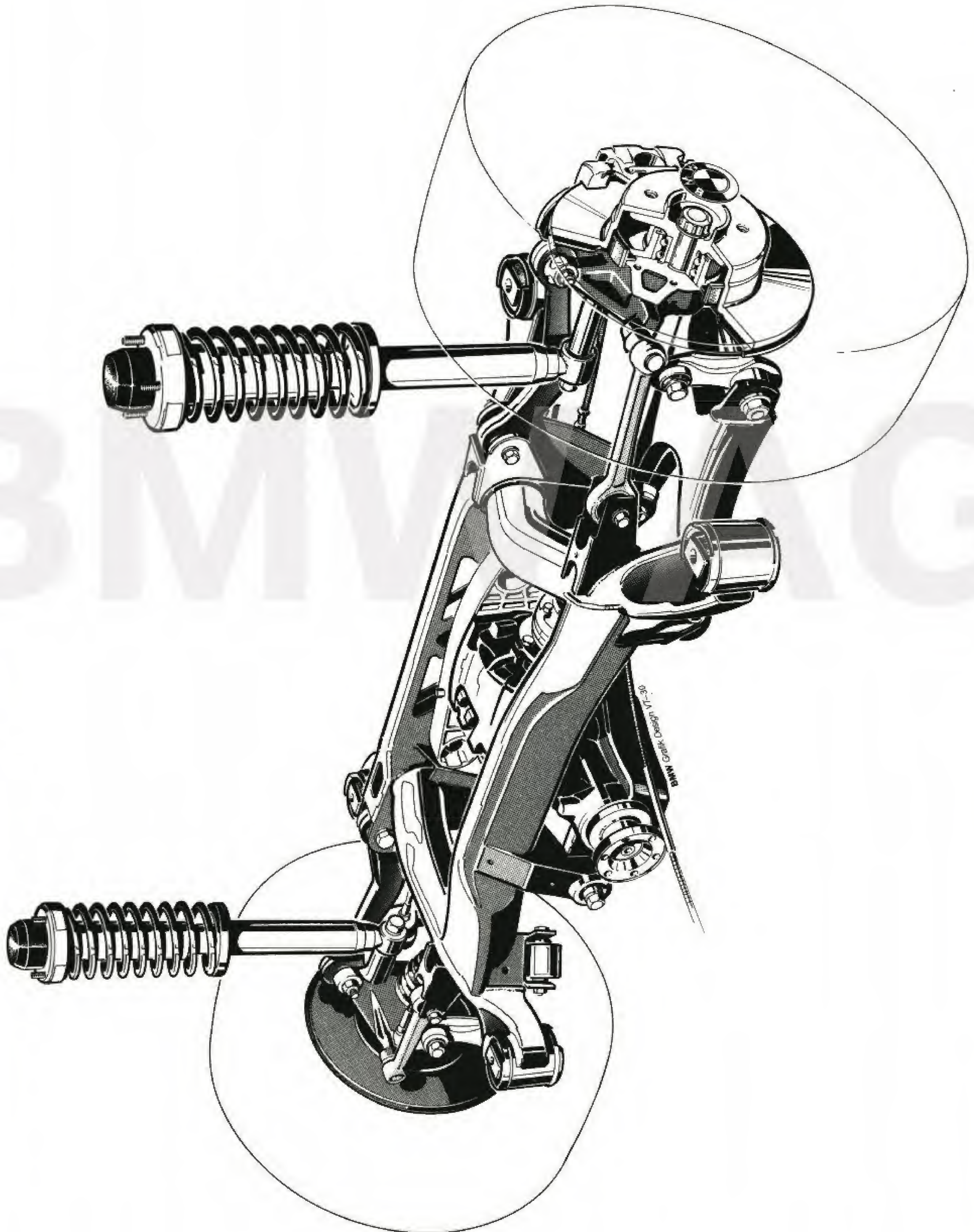
BMW Serie 7 (modelo año '94)

Eje delantero

Eje elástico de montantes telescópicos, doble articulación
desfase de marcha recta, compensación de fuerzas transversales,
reducción del hundimiento de arranques

BMW 7er (Mj. '94)

A 94/72



BMW 7er Reihe (Mj. '94)

Integral-Hinterachse

Räumlich wirkende Radaufhängung,
Anfahr- und Bremsnickausgleich

BMW 7 Series (1994 model year)

Integral rear axle

Multi-dimensional wheel suspension with five control arms,
squat and brake dive compensation

BMW séries 7 (année autom. '94)

Pont AR intégral

Pont suspension à roues dans les différents axes à 5 triangles,
effet anticabrage et compensation antiplongée

BMW Serie 7 (anno modello '94)

Asse posteriore integrale

Sospensione »tridimensionale« a cinque bracci,
compensazione del beccheggio in fase di partenza
e frenata

BMW Serie 7 (modelo año '94)

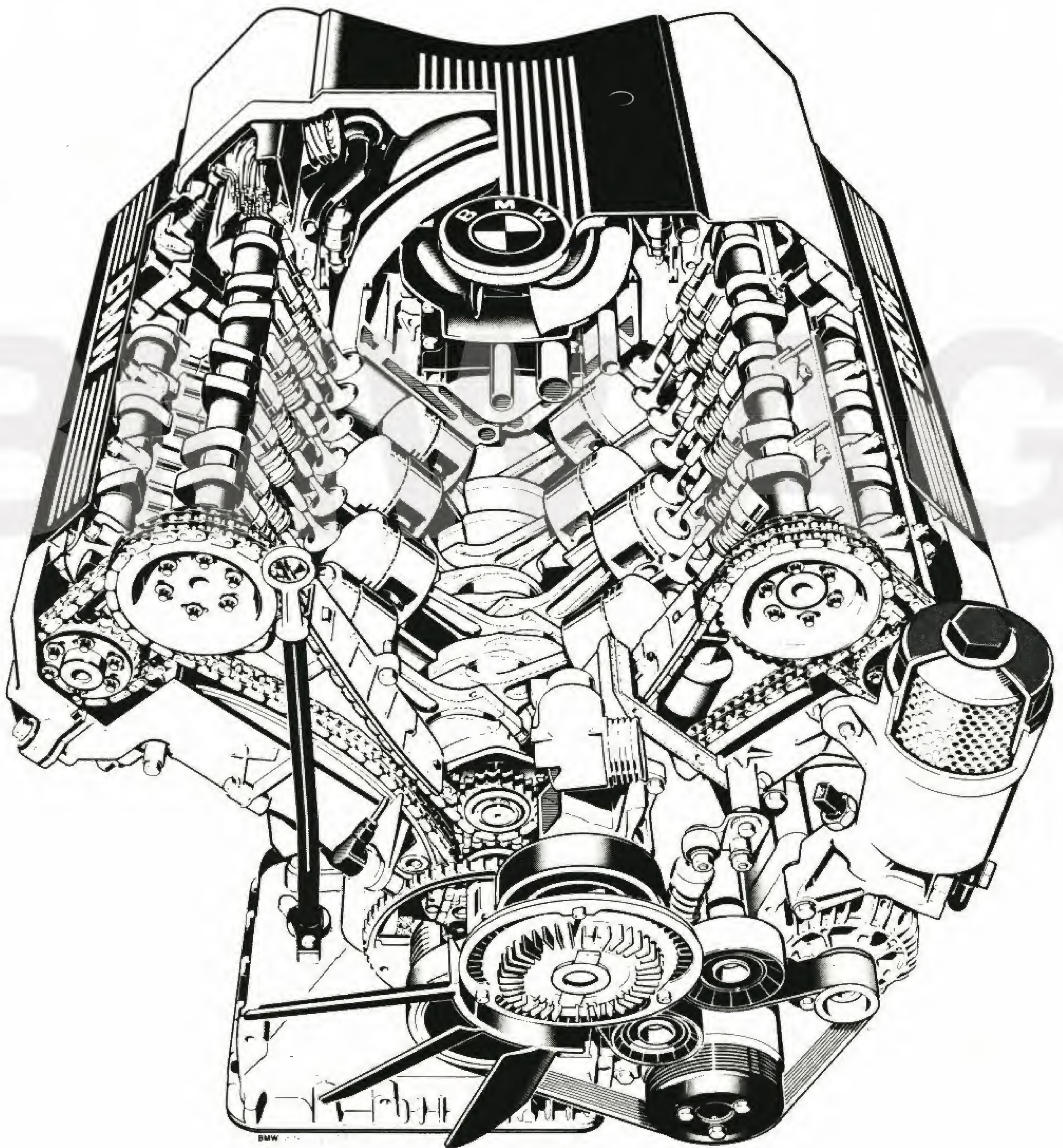
Eje trasero integral

Suspensión del efecto multidinámico con cinco brazos
Compensación del hundimiento de arranque y reducción
del hundimiento de frenada

BMW V8 3,0 l/4 l Vierventilmotor (Mj. '94)

Motorschnittbild

A 94/39



BMW V 8 3,0 I Vierventilmotor (Mj. '94)

Motorschnitt

Achtzylinder V-Motor

Hubraum: 2997 cm³
Leistung: 160 kW/218 PS bei 5800 min⁻¹
max. Drehmoment: 290 Nm bei 4500 min⁻¹

BMW V 8 3,0 I Four-valve Engine (1994 model year)

Engine cutaway drawing

8-cylinder V-engine

Capacity: 2997 cc
Output: 160 kW/218 bhp at 5800 rpm
Max torque: 290 Nm at 4500 rpm

BMW V 8 vingt-quatre soupapes de 3,0 I (année autom. '94)

Vue en crevé du moteur

Huit cylindres en V

Cylindrée: 2997 cm³
Puissance: 160 kW/218 ch à 5800 tr/mn
Couple maxi.: 290 Nm à 4500 tr/mn

BMW V 8 3,0 I quattro valvole (anno modello '94)

Trasparenza del motore

Motore 8 cilindri a V

Cilindrata: 2997 cm³
Potenza: 160 kW/218 CV a 5800 giri/min.
Coppia massima: 290 Nm a 4500 giri/min.

BMW de 3,0 I Motor de 8 cilindros en V y cuatro valvulas por cilindro (modelo año '94)

Transparencia del motor

Motor de 8 cilindros en V

Cilindrada: 2997 c.c.
Potencia máxima: 160 kW/218 CV a 5800 r.p.m.
Par motor máximo: 290 Nm a 4500 r.p.m.

BMW V 8 4,0 I Vierventilmotor (Mj. '94)

Motorschnitt..

Achtzylinder V-Motor

Hubraum: 3982 cm³
Leistung: 210 kW/286 PS bei 5800 min⁻¹
max. Drehmoment: 400 Nm bei 4500 min⁻¹

BMW V 8 4,0 I Four-valve Engine (1994 model year)

Engine cutaway drawing

8-cylinder V-engine

Capacity: 3982 cc
Output: 210 kW/286 bhp at 5800 rpm
Max torque: 400 Nm at 4500 rpm

BMW V 8 vingt-quatre soupapes de 4,0 I (année autom. '94)

Vue en crevé du moteur

Huit cylindres en V

Cylindrée: 3982 cm³
Puissance: 210 kW/286 ch à 5800 tr/mn
Couple maxi.: 400 Nm à 4500 tr/mn

BMW V 8 4,0 I quattro valvole (anno modello '94)

Trasparenza del motore

Motore 8 cilindri a V

Cilindrata: 3982 cm³
Potenza: 210 kW/286 CV a 5800 giri/min.
Coppia massima: 400 Nm a 4500 giri/min.

BMW de 4,0 I Motor de 8 cilindros en V y cuatro valvulas por cilindro (modelo año '94)

Transparencia del motor

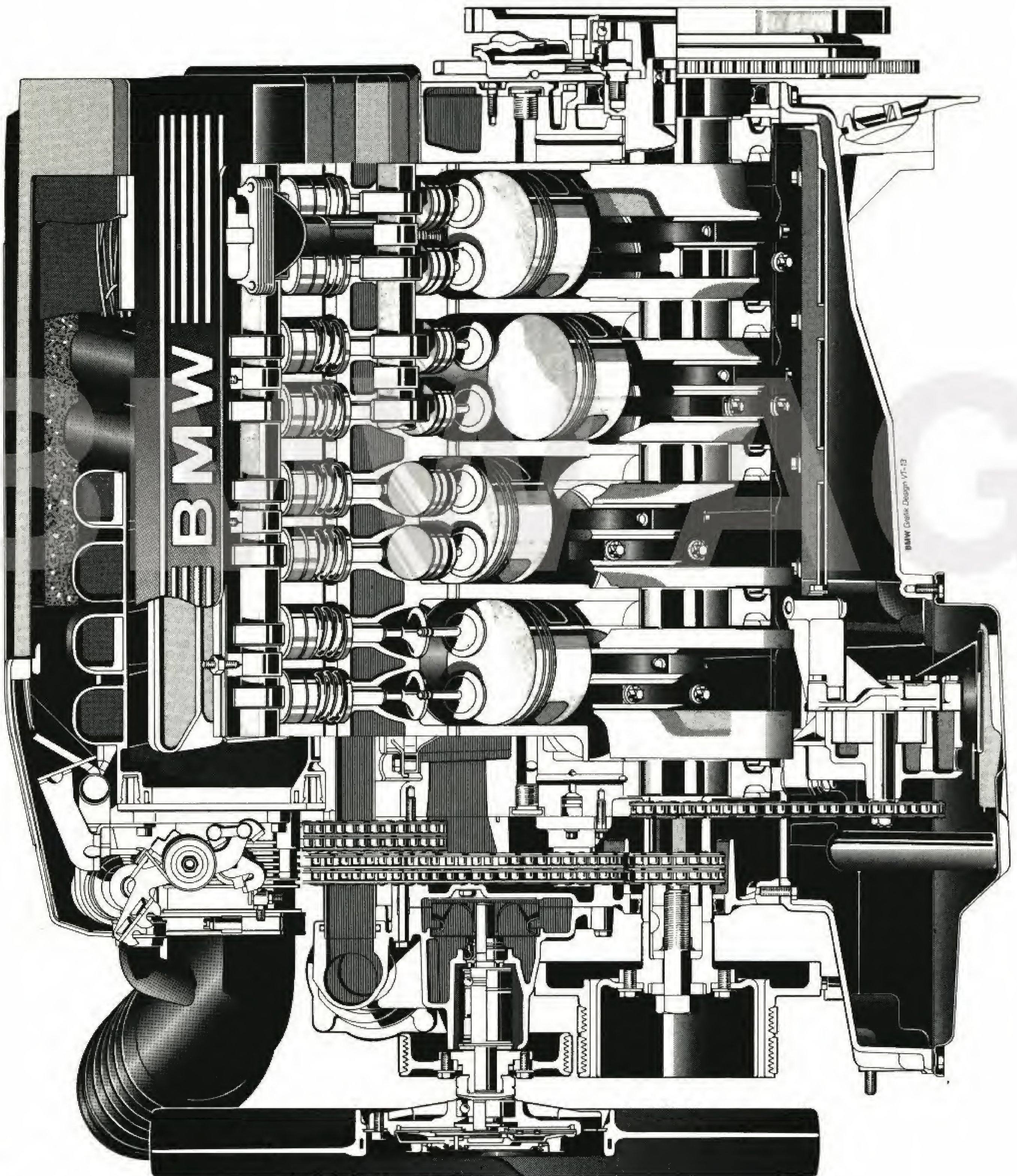
Motor de 8 cilindros en V

Cilindrada: 3982 c.c.
Potencia máxima: 210 kW/286 CV a 5900 r.p.m.
Par motor máximo: 400 Nm a 4500 r.p.m.

BMW V8 3,0 l/4 l Vierventilmotor (Mj. '94)

Motorschnittbild, Längsschnitt

A 94/41



BMW V 8 3,0 I Vierventilmotor (Mj. '94)

Motorschnitt, Längsschnitt

Achtzylinder V-Motor

Hubraum: 2997 cm³
Leistung: 160 kW/218 PS bei 5800 min⁻¹
max. Drehmoment: 290 Nm bei 4500 min⁻¹

BMW V 8 3,0 I Four-valve Engine (1994 model year)

Engine cutaway drawing, longitudinal section

8-cylinder V-engine

Capacity: 2997 cc
Output: 160 kW/218 bhp at 5800 rpm
Max torque: 290 Nm at 4500 rpm

BMW V 8 vingt-quatre soupapes de 3,0 I (année autom. '94)

Vue en crevé du moteur, coupe longitudinale

Huit cylindres en V

Cylindrée: 2997 cm³
Puissance: 160 kW/218 ch à 5800 tr/mn
Couple maxi.: 290 Nm à 4500 tr/mn

BMW V 8 3,0 I quattro valvole (anno modello '94)

Trasparenza del motore, longitudinale

Motore 8 cilindri a V

Cilindrata: 2997 cm³
Potenza: 160 kW/218 CV a 5800 giri/min.
Coppia massima: 290 Nm a 4500 giri/min.

BMW de 3,0 I Motor de 8 cilindros en V y cuatro valvulas por cilindro (modelo año '94)

Transparencia del motor, sección longitudinal

Motor de 8 cilindros en V

Cilindrada: 2997 c.c.
Potencia máxima: 160 kW/218 CV a 5800 r.p.m.
Par motor máximo: 290 Nm a 4500 r.p.m.

BMW V 8 4,0 I Vierventilmotor (Mj. '94)

Motorschnitt, Längsschnitt

Achtzylinder V-Motor

Hubraum: 3982 cm³
Leistung: 210 kW/286 PS bei 5800 min⁻¹
max. Drehmoment: 400 Nm bei 4500 min⁻¹

BMW V 8 4,0 I Four-valve Engine (1994 model year)

Engine cutaway drawing, longitudinal-section

8-cylinder V-engine

Capacity: 3982 cc
Output: 210 kW/286 bhp at 5800 rpm
Max torque: 400 Nm at 4500 rpm

BMW V 8 vingt-quatre soupapes de 4,0 I (année autom. '94)

Vue en crevé du moteur, coupe longitudinale

Huit cylindres en V

Cylindrée: 3982 cm³
Puissance: 210 kW/286 ch à 5800 tr/mn
Couple maxi.: 400 Nm à 4500 tr/mn

BMW V 8 4,0 I quattro valvole (anno modello '94)

Trasparenza del motore, longitudinale

Motore 8 cilindri a V

Cilindrata: 3982 cm³
Potenza: 210 kW/286 CV a 5800 giri/min.
Coppia massima: 400 Nm a 4500 giri/min.

BMW de 4,0 I Motor de 8 cilindros en V y cuatro valvulas por cilindro (modelo año '94)

Transparencia del motor, sección longitudinal

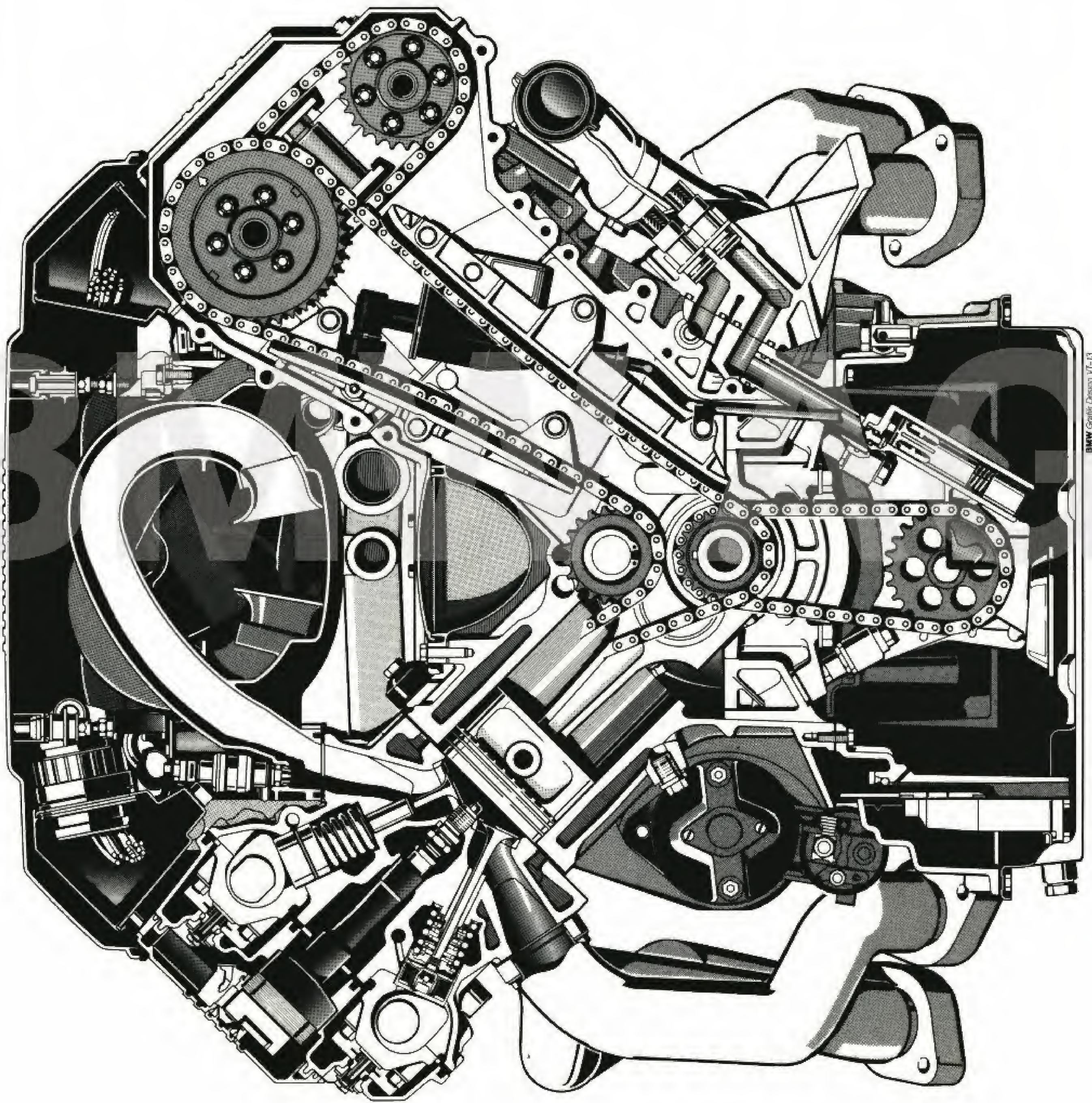
Motor de 8 cilindros en V

Cilindrada: 3982 c.c.
Potencia máxima: 210 kW/286 CV a 5900 r.p.m.
Par motor máximo: 400 Nm a 4500 r.p.m.

BMW V8 3,0 l/4 l Vierventilmotor (Mj. '94)

Motorschnittbild, Querschnitt

A 94/40



BMW V 8 3,0 I Vierventilmotor (Mj. '94)

Motorschnitt, Querschnitt

Achtzylinder V-Motor

Hubraum: 2997 cm³
Leistung: 160 kW/218 PS bei 5800 min⁻¹
max. Drehmoment: 290 Nm bei 4500 min⁻¹

BMW V 8 3,0 I Four-valve Engine (1994 model year)

Engine cutaway drawing, cross-section

8-cylinder V-engine

Capacity: 2997 cc
Output: 160 kW/218 bhp at 5800 rpm
Max torque: 290 Nm at 4500 rpm

BMW V 8 vingt-quatre soupapes de 3,0 I (année autom. '94)

Vue en crevé du moteur, coupe

Huit cylindres en V

Cylindrée: 2997 cm³
Puissance: 160 kW/218 ch à 5800 tr/mn
Couple maxi.: 290 Nm à 4500 tr/mn

BMW V 8 3,0 I quattro valvole (anno modello '94)

Trasparenza del motore, trasversale

Motore 8 cilindri a V

Cilindrata: 2997 cm³
Potenza: 160 kW/218 CV a 5800 giri/min.
Coppia massima: 290 Nm a 4500 giri/min.

BMW de 3,0 I Motor de 8 cilindros en V y cuatro valvulas por cilindro (modelo año '94)

Transparencia del motor, sección transversal

Motor de 8 cilindros en V

Cilindrada: 2997 c.c.
Potencia máxima: 160 kW/218 CV a 5800 r.p.m.
Par motor máximo: 290 Nm a 4500 r.p.m.

BMW V 8 4,0 I Vierventilmotor (Mj. '94)

Motorschnitt, Querschnitt

Achtzylinder V-Motor

Hubraum: 3982 cm³
Leistung: 210 kW/286 PS bei 5800 min⁻¹
max. Drehmoment: 400 Nm bei 4500 min⁻¹

BMW V 8 4,0 I Four-valve Engine (1994 model year)

Engine cutaway drawing, cross-section

8-cylinder V-engine

Capacity: 3982 cc
Output: 210 kW/286 bhp at 5800 rpm
Max torque: 400 Nm at 4500 rpm

BMW V 8 vingt-quatre soupapes de 4,0 I (année autom. '94)

Vue en crevé du moteur, coupe

Huit cylindres en V

Cylindrée: 3982 cm³
Puissance: 210 kW/286 ch à 5800 tr/mn
Couple maxi.: 400 Nm à 4500 tr/mn

BMW V 8 4,0 I quattro valvole (anno modello '94)

Trasparenza del motore, trasversale

Motore 8 cilindri a V

Cilindrata: 3982 cm³
Potenza: 210 kW/286 CV a 5800 giri/min.
Coppia massima: 400 Nm a 4500 giri/min.

BMW de 4,0 I Motor de 8 cilindros en V y cuatro valvulas por cilindro (modelo año '94)

Transparencia del motor, sección transversal

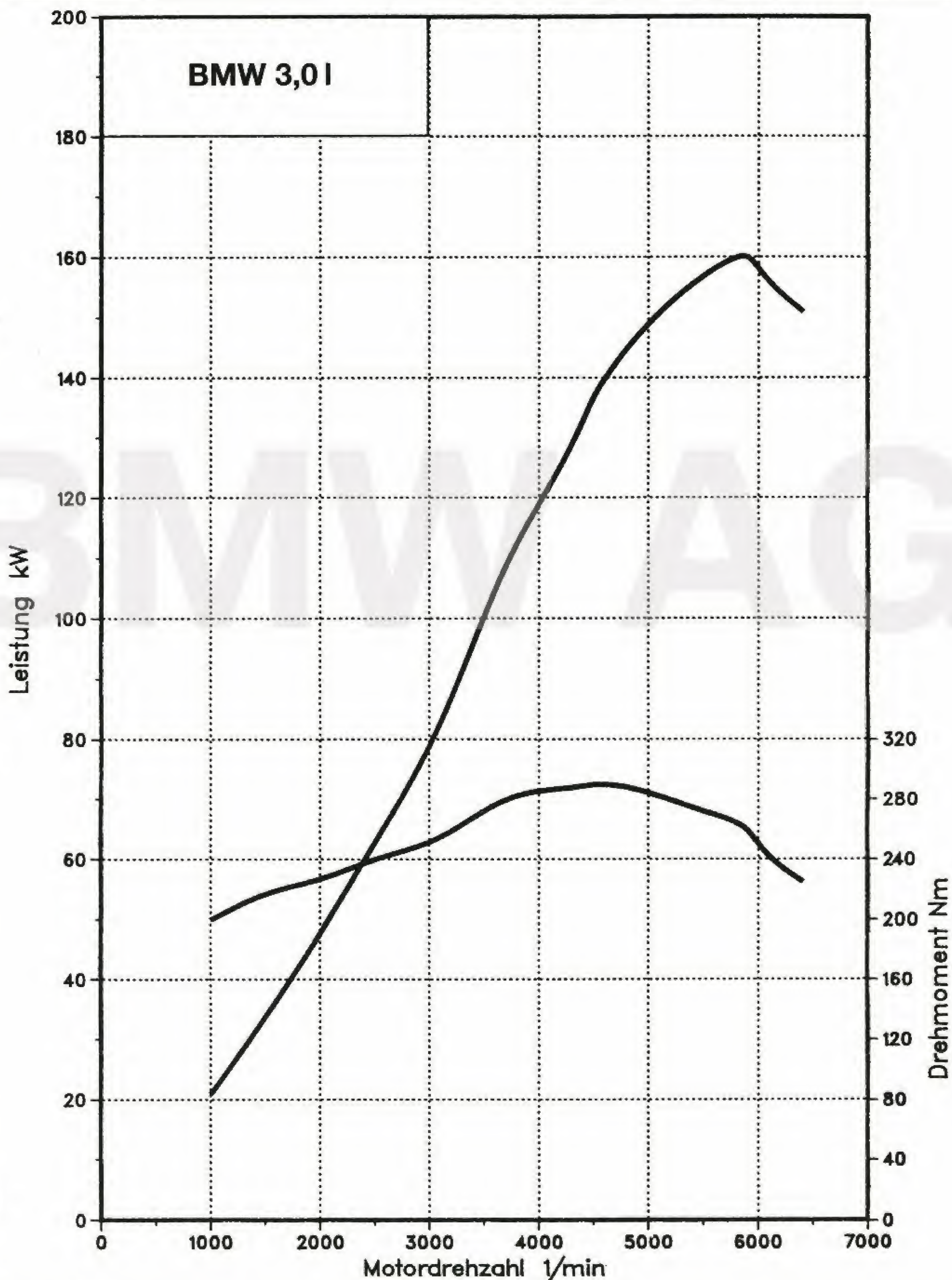
Motor de 8 cilindros en V

Cilindrada: 3982 c.c.
Potencia máxima: 210 kW/286 CV a 5900 r.p.m.
Par motor máximo: 400 Nm a 4500 r.p.m.

BMW V 8 3,0 l Vierventilmotor (Mj. '94)

Leistungs- und Drehmomentdiagramm

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BMW V 8 3,0 l Vierventilmotor Mj. '94

Leistungs- und Drehmomentdiagramm

Achtzylinder V-Motor

Hubraum 2997 cm³

Nennleistung 160 kW / 218 PS bei 5800 min⁻¹

max. Drehmoment 290 Nm bei 4500 min⁻¹

BMW V 8 3.0-ltr four-valve engine (1994 model year)

Output and torque diagram

8-cylinder V-engine

Capacity 2997 cc

Max output 160 kW / 218 bhp at 5800 rpm

Max torque 290 Nm at 4500 rpm

BMW V 8 trente-deux soupapes de 3,0 l (année autom. '94)

Courbes caractéristiques de puissance et de couple

Moteur huit cylindres en V

Cylindrée 2997 cm³

Puissance nominale 160 kW / 218 ch à 5800 tr/mn

Couple maxi. 290 Nm à 4500 tr/mn

BMW V 8 motore 3,0 l quattro valvole (anno modello '94)

Diagramma di potenza e coppia

Motore 8 cilindri a V

Cilindrata 2997 cm³

Potenza nominale 160 kW / 218 CV a 5800 giri/min.

Coppia massima 290 Nm a 4500 giri/min.

**Motor BMW de 8 cilindros en V de 3,0 l
y cuatro válvulas por cilindro (modelo año '94)**

Características de potencia y par motor máximo

Motor de 8 cilindros en V

Cilindrada 2997 c.c.

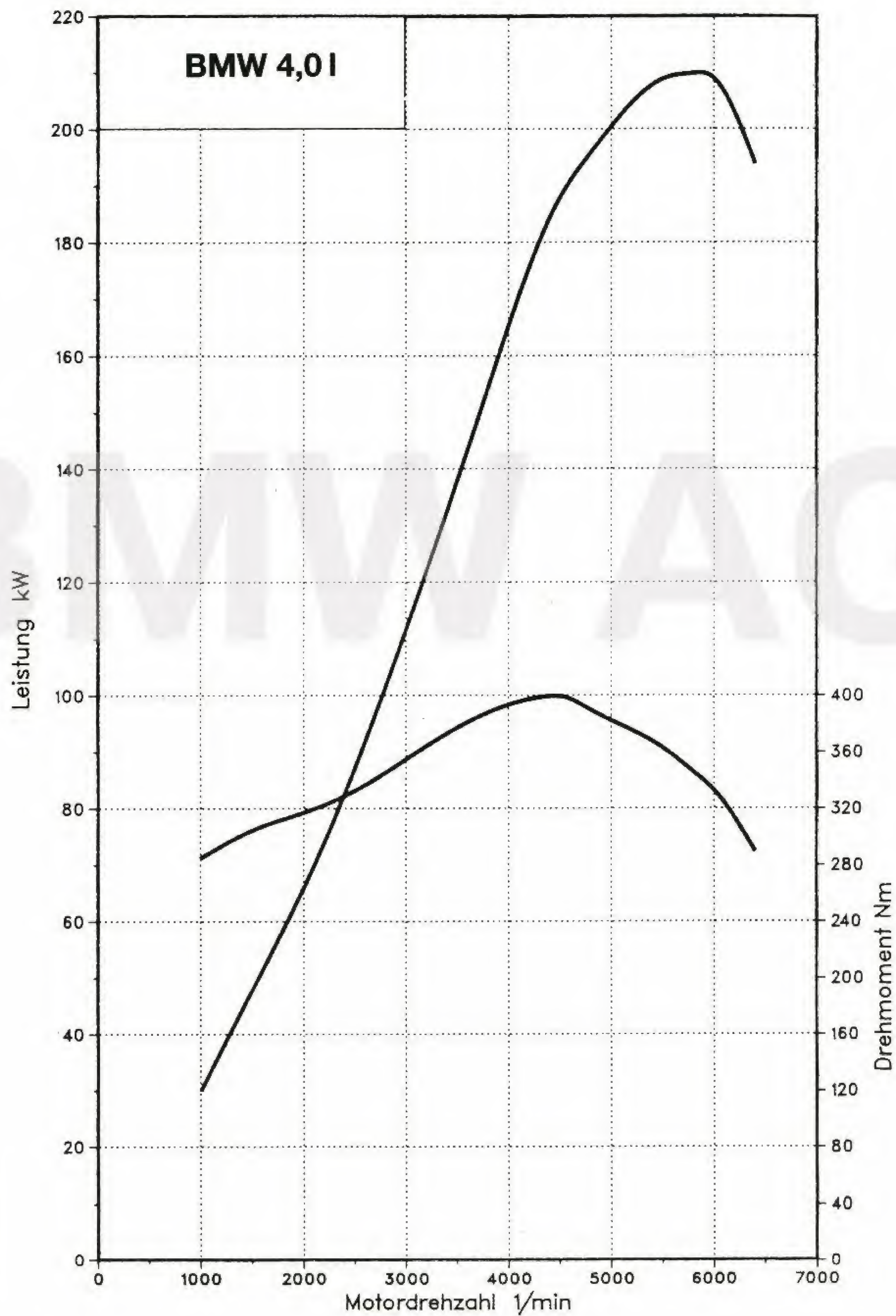
Potencia máxima 160 kW / 218 CV a 5800 r.p.m.

Par motor máximo 290 Nm a 4500 r.p.m.

BMW V 8 4,0 l Vierventilmotor (Mj. '94)

Leistungs- und Drehmomentdiagramm

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BMW V 8 4,0 l Vierventilmotor Mj. '94

Leistungs- und Drehmomentdiagramm

Achtzylinder V-Motor

Hubraum 3982 cm³

Nennleistung 210 kW / 286 PS bei 5800 min⁻¹

max. Drehmoment 400 Nm bei 4500 min⁻¹

BMW V 8 4.0-ltr four-valve engine (1994 model year)

Output and torque diagram

8-cylinder V-engine

Capacity 3982 cc

Max output 210 kW / 286 bhp at 5800 rpm

Max torque 400 Nm at 4500 rpm

BMW V 8 trente-deux soupapes de 4,0 l (année autom. '94)

Courbes caractéristiques de puissance et de couple

Moteur huit cylindres en V

Cylindrée 3982 cm³

Puissance nominale 210 kW / 286 ch à 5800 tr/mn

Couple maxi. 400 Nm à 4500 tr/mn

BMW V 8 motore 4,0 l quattro valvole (anno modello '94)

Diagramma di potenza e coppia

Motore 8 cilindri a V

Cilindrata 3982 cm³

Potenza nominale 210 kW / 286 CV a 5800 giri/min.

Coppia massima 400 Nm a 4500 giri/min.

Motor BMW de 8 cilindros en V de 4,0 l y cuatro válvulas por cilindro (modelo año '94)

Características de potencia y par motor máximo

Motor de 8 cilindros en V

Cilindrada 3982 c.c.

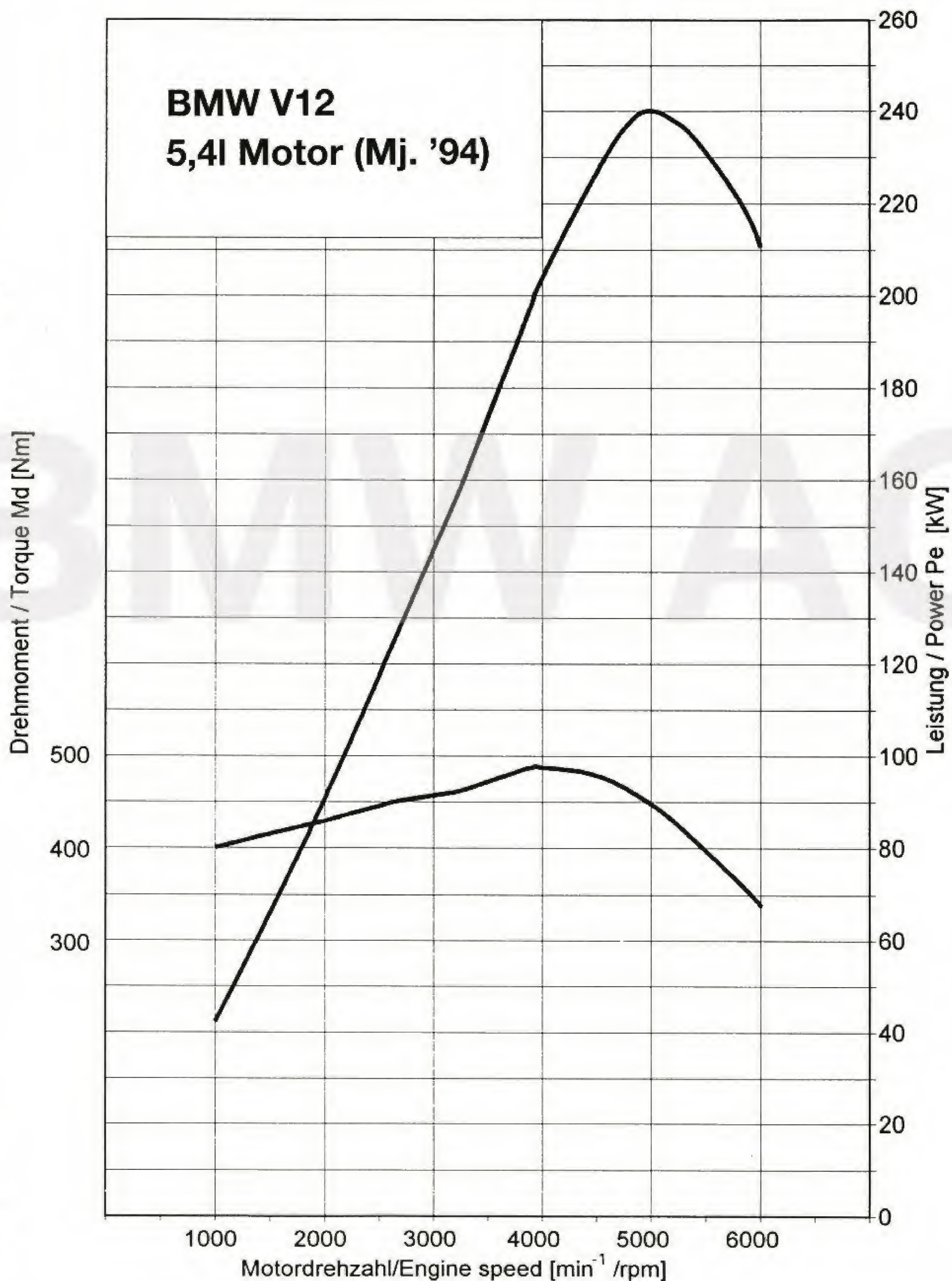
Potencia máxima 210 kW / 286 CV a 5800 r.p.m.

Par motor máximo 400 Nm a 4500 r.p.m.

BMW V12 5,4l Motor (Mj. '94)

Leistungs- und Drehmomentdiagramm

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BMW V12 5,4l Motor (Mj. '94)

Leistungs- und Drehmomentdiagramm

12 Zylinder V-Motor

Hubraum: 5379 cm³
Leistung: 240 kW/327 PS bei 5000 min⁻¹
max. Drehmoment: 490 Nm bei 3900 min⁻¹

BMW V12 5.4-ltr engine (1994 model year)

Output and torque diagram

12-cylinder V-engine

Capacity: 5379 cc
Output: 240 kW/327 bhp at 5000 rpm
Max torque: 490 Nm at 3900 rpm

BMW V12 de 4,5 l (année autom. '94)

Courbes caractéristiques de puissance et de couple

Moteur douze cylindres en V

Cylindrée: 5379 cm³
Puissance: 240 kW/327 ch à 5000 tr/mn
Couple maxi.: 490 Nm à 3900 tr/mn

BMW V12 motore 5,4 l (anno modello '94)

Diagramma di potenza e coppia

Motore 12 cilindri a V

Cilindrata: 5379 cm³
Potenza: 240 kW/327 CV a 5000 giri/min.
Coppia massima: 490 Nm a 3900 giri/min.

BMW V12 de 5,4 l (modelo año '94)

Características de potencia y par motor máximo

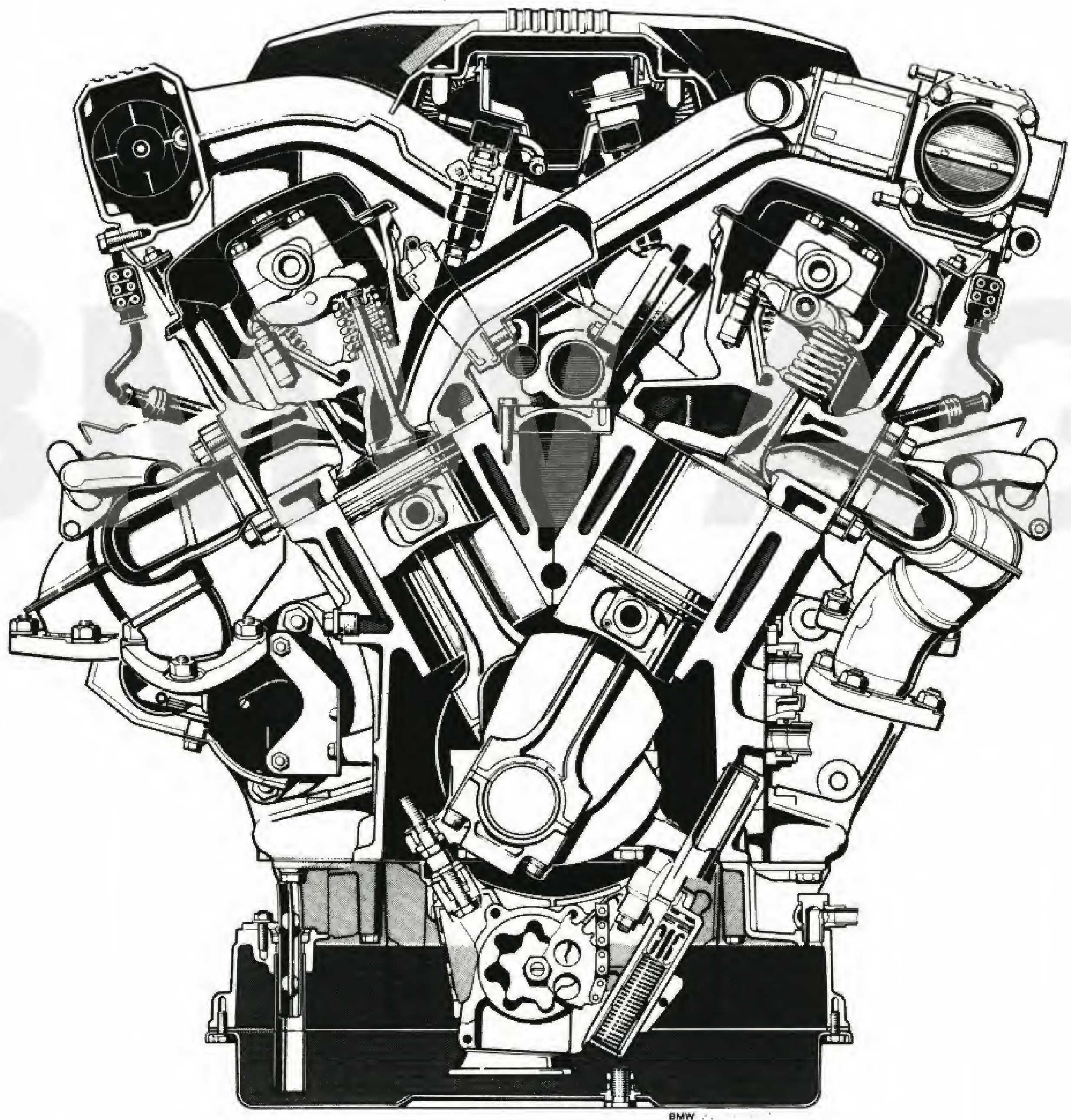
Motor de 12 cilindros en V

Cilindrada: 5379 c.c.
Potencia maxima: 240 kW/327 CV a 5000 r.p.m.
Par motor máximo: 490 Nm a 3900 r.p.m.

BMW V12 5,4 l Motor (Mj. '94)

Motorschnittbild, Querschnitt

A 94/74



BMW V12 5,4l Motor (Mj. '94)

Motorschnittbild, Querschnitt

12 Zylinder V-Motor

Hubraum: 5379 cm³
Nennleistung: 240 kW/327 PS bei 5000 min⁻¹
max. Drehmoment: 490 Nm bei 3900 min⁻¹

BMW V12 5,4-ltr engine (1994 model year)

Engine cutaway drawing, cross-section

12-cylindere V-engine

Capacity: 5379 cc
Max output: 240 kW/327 bhp at 5000 rpm
Max torque: 490 Nm at 3900 rpm

BMW V12 de 5,4 l (année autom. '94)

Vue en crevé du moteur, coupe

Moteur douze cylindres en V

Cylindrée: 5379 cm³
Puissance nominale: 240 kW/327 ch à 5000 tr/mn
Couple maxi.: 490 Nm à 3900 tr/mn

BMW V12 motore 5,4 l (anno modello '94)

Trasparenza del motore, trasversale

Motore 12 cilindri a V

Cilindrata: 5379 cm³
Potenza nominale: 240 kW/327 CV a 5000 giri/min.
Coppia massima: 490 Nm a 3900 giri/min.

BMW V12 de 5,4 l (modelo año '94)

Transparencia del motor, sección transversal

Motor de 12 cilindros en V

Cilindrada: 5379 c.c.
Potencia máxima: 240 kW/327 CV a 5000 r.p.m.
Par motor máximo: 490 Nm a 3900 r.p.m.

